AI4media

ARTIFICIAL INTELLIGENCE FOR THE MEDIA AND SOCIETY

D9.1

IAIDA organisation and curriculum design

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Abstract	Deliverable D9.1 describes the AIDA organisational/legal structure and objectives and defines the roles and responsibilities of the present and future legal entity members. It provides the first version of the AI curriculum and lays the groundwork for enabling the academic synergies and AIDA exchange program. It overviews the main requirements of the AIDA portal that will eventually serve as a reference point for PhD students to access all AIDA offered resources, and finally, it briefly reports the activities related with the AI Excellence Lecture Series.

Keywords	AIDA formation, AIDA organization, AIDA curriculum, AIDA AI Excellence Lecture Series, AIDA website

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1.1	26/02/2021	Vasileios Mygdalis	Final version

Table of Abbreviations and Acronyms

Abbreviation	Meaning
AI	Artificial Intelligence
AIDA	International AI Doctoral Academy
CCA	Certificate of Attendance
CSA	Collaboration and Support Action
DoA	Description of Action
EC	European Commission
ECTS	European Credit Transfer and Accumulation System
ET	Education and training
GA	General Assembly
ICT	Information Communication Technology
KPI	Key performance indicator
MoU	Memorandum of Understanding
NoE	Networks-of-Excellence
RI	Research & Innovation
R&D	Reserach and Development
SoA	State-of-the-Art

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Executive Summary

Deliverable D9.1 “IAIDA organisation and curriculum design” is the first deliverable of WP9 “Doctoral Academy and exchange programme” of the AI4Media project. WP9 will create the International AI Doctoral Academy (AIDA), in the form of a European non-profit organisation of academic, research institutions and industrial partners, constituted through a Memorandum of Understanding (MoU) with a governance having excellent industrial presence, operating like an umbrella organisation and offering management services to all its partners and beyond.

The scope of this enterprise spans beyond AI4Media project, i.e., to eventually trigger a leading academic critical mass in Europe, so that excellence in AI research is achieved and the industry focus is ensured. AIDA aims to provide complete and modular academic paths to registered PhD students, enabling them to develop their knowledge and skills according to their own preference, and providing them access to a wide spectrum of AI-focused resources, academic events, industrial/RI internships and other activities. AIDA will last well beyond the duration of AI4Media, pursuing to the maximum extent the collaboration and full integration with the other successful ICT-48 Networks-of-Excellence (NoE), while offering multidisciplinary PhD degrees that involve knowledge and skill diffusion, both across partners and worldwide.

The purpose of this document is threefold:

- to describe the AIDA organisational/legal structure, objectives, and define the roles and responsibilities of the present and future legal entity members,
- to provide the first version of the AI curriculum, designed in collaboration with AI4Media partners, and lay the groundwork for enabling the academic synergies with the AI4Media exchange program,
- to overview the main functionalities of the AIDA portal that will eventually serve as a reference point for PhD students to access all AIDA offered resources.

AIDA work started as an AI4Media activity, as per AI4Media DoA. The more artistically-inspired acronym AIDA was adopted. Its concept and MoU were proposed to all ICT48 projects. It was adopted first by VISION CSA and, since then, we can safely consider that it was co-initiated by AI4Media and VISION CSA. As of the date of authoring, all ICT48 projects expressed interest in joining AIDA (VISION CSA, HumanE-AI Net and ELISE joined already, and TAILOR entered AIDA committees and it is in the process of joining formally). MoU is in the final stages of legal preparation and will be sent out to AIDA members of any type to review and sign it.

As AIDA formation progresses, D9.1 should be considered as a first version of work in progress. AIDA MoU, structure and activities may be adjusted, as per AIDA governing body decisions, so that it fits better its goal and stated ICT48 objectives. D9.1 (and future AIDA-related AI4Media deliverables) refer to the entire joint work of AIDA from the point of view of AI4Media and its work

therein. However, when it comes to manpower consumption, D9.1 (and future AIDA-related AI4Media deliverables) refers only to AI4Media partner personnel work and contributions, so that there is absolutely no issue of double reporting.

The remainder of this report is structured as follows. Section 1 describes the work carried out in each of the three WP9 Tasks with respect to AI4Media objectives. Section 2 defines the AIDA scope, governance structure and operational goals, as explained in the context of a Memorandum of Understanding that will be circulated and signed among all every participating legal entity member. Section 3 describes the AIDA curriculum course offerings and exchange program. Section 4 overviews the current structure of the AIDA website and defines the use cases and functionalities of the web application that will be developed for AIDA PhD students and institutional members. Section 5 briefly presents the “AI Excellence lecture series”. Finally, conclusions are drawn in Section 6.

1. Introduction

The aim of WP9 is to trigger a leading academic critical mass in Europe, so that excellence in AI research is achieved and industry focus is ensured. WP9 AI Doctoral Academy and exchange programme is scheduled to last four years (M1-M48). Our aim is to exploit WP9's effort towards setting-up the foundation for creating a doctoral academy that will survive beyond the AI4Media project. Its activities are clustered in three main tasks:

- T9.1 - Formation, management and bookkeeping of the International AI Doctoral Academy (M1-M48)
- T9.2 - AIDA curriculum design, industrial and academic synergies (M1-M48)
- T9.3 - Spreading and branding European AI excellence (M1-M36)

This deliverable reports the effort of T9.1 and T9.2, while T9.3 results will be reported in Deliverable D9.3, which is scheduled to be submitted on M36. For the sake of completeness, we briefly report the progress in every WP9 task until M6 in Subsections 1.1-1.3. Finally, in Subsection 1.4, we link the work carried out in each respective WP9 Task with respect to the AI4Media Project Objectives.

1.1. Formation of the International AI Doctoral Academy (T9.1)

The main objective of T9.1 is to deal with the management, bookkeeping and reporting of AIDA activities. Our first aim was to secure “inclusion” and to involve all other ICT-48 projects in the AIDA initiative. Between M1-M6, we focused on establishing the communication channels within AI4Media project partners, to promote and request involvement of every AI4Media partner. To this end, seven WP9 telcos were held in order to split the work between interested parties, to appoint AI4Media AIDA committee members and to define responsibilities, for efficient monitoring of the AI curriculum, the exchange program and spreading and branding activities.

Moreover, during the same period, we worked on building the liaisons between AI4Media and other ICT-48 projects. More specifically, the EC funded 5 ICT-48 projects on AI are the following:

- AI4Media (AI for the Society and the Media Industry https://ai4media.eu/)
- ELISE (fundamental research in AI, driven by machine learning, https://ellis.eu/en)
- HumanE-AI-Net (scientific foundations and technological breakthroughs needed to build AI systems that enhance human intelligence rather than replacing it, https://www.humane-ai.eu/)
- TAILOR (trustworthy AI, https://liu.se/en/research/tailor)
- VISION CSA (coordination between the new networks of centres of excellence in AI as well as with the European Commission, https://cordis.europa.eu/project/id/952070).

Four inter-project telcos were held among project partner representatives. The first step was to identify similar WP/Task descriptions or objectives for each ICT-

48 project. Afterwards, we defined the minimum set of points that most potential AIDA members should agree on. This set of agreement was established in a document that was later used to generate a Memorandum of Understanding (MoU), which has been circulated first among academic partners of AI4Media, then shared to the other ICT-48 projects. The provisions of this MoU are described in Section 2.

As a result of this cooperation, the three ICT-48 networks (AI4Media, ELISE, HumanE-AI NET) and the VISION consortium joined forces and, under the joint initiative of VISION and AI4Media, founded a new joint instrument to support a world-level AI education and research programme. Furthermore, TAILOR has entered AIDA committees and is currently in the process of joining formally. The International AI Doctoral Academy has been created to offer access to knowledge and expertise and attracting PhD talents in Europe. Academic institutions of all interested parties participating in ICT-48 projects were invited to become (founding) members of the AIDA academy.

For all AIDA doctoral academy operations, the main tool for advertisement and interaction between people of the academic, research institutes and industrial community will be the AIDA website (www.i-aida.org). This website contains the most recent version of AIDA curriculum (designed in T9.2), course offerings, details about the student registration procedure, and other resources such as course material. Moreover, it will be used for advertising all AIDA activities (T9.3) and events, such as summer schools, AI excellence lecture series, etc. The contents of this website will be fully dynamic, allowing AIDA academic members (lecturers) to upload and modify content regarding their course offerings and relevant activities, and will provide administrative and secretariat tools for AIDA students. Details about the website content and future functionalities are described in Section 4 of this document.

1.2. AIDA curriculum design and exchange program (T9.2)

This task deals with the design of the AIDA curriculum and exchange program. Between M1-M6, it was designed together with AI4Media academic partners. All partners were asked to voluntarily open their course offerings for students outside their own organisation, according to their own fair terms. As a result, 4 full academic semester courses, 11 short courses and 6 web course offers were opened to the public community. These course offerings were grouped into three distinct curricula namely AI-core, AI and media, AI-society, and are complemented with elective courses. The latest version of the curriculum is always going to appear on the AIDA website http://www.i-aida.org/ai-phd-curriculum/, and is analytically described in Section 3.1.

Complementing the curriculum, this task also deals with empowering academic and industrial interactions with a financially supported exchange program. A program called “AI4Media Junior Fellows Program” was designed to support the mobility of PhD students, MS students, and early career postdocs. The program is open to Junior Fellows which are talented women and men working in the AI, AI media and AI society domains. It will organise a yearly event called “Junior Fellow Day” that will enhance the visibility among the exchanged fellows.

Finally, the program promotes excellence by provisioning specialized funds for supporting the attendance in top-venue conference publications, produced by an exchanged fellow. The program is described in detail in Section 3.2.

1.3. Spreading and branding European AI excellence (T9.3)

This task will organise public courses, summer schools, conferences, symposia, to spread the knowledge acquired within AI4Media and other NoE, specially targeting European SMEs, AI institutions and individual researchers. Advantages for academic staff involve synergies for future R&D projects, delivering prestigious AIDA itinerant lecture series in participating Universities and over the world (call them "AI troubadours"). AIDA scope will be global, open to the best AI players worldwide, both for membership and for AIDA activities. Findings of AIDA activities and exercises will be incorporated into the annual updates of AIDA curriculum.

Between M1-M6, the most prominent event organised within T9.3 is the "AI excellence lectures", hosted as a virtual event by AUTH, that has attracted over 250 participants in the first two lectures. Top AI scientists and industries have been invited to deliver lectures on hot AI topics emphasizing on societal/security/privacy/trustworthiness issues. The first lectures of this series are briefly described in Section 5.

The same people will also be invited in a yearly event called "AI mellontology", to informally discuss their predictions about the near-term future of European AI research focuses. The first event will also be hosted by AUTH, in summer 2021. Every T9.3 event will be advertised in http://www.i-aida.org/. Another dissemination channel that will be exploited is the newly established AIDA mailing list https://lists.auth.gr/sympa/info/aida.

During the same period, several conferences (e.g., CLEF) and conference workshops in conjunction with ICPR were endorsed by AI4media, while cooperation with other AI events has been established (AI4EU café) to become future AI4media events. This task also collaborates very tightly with AI4Media WP11 (dissemination and communication) and works in collaboration with other ICT-48 dissemination/communications channels outside the AI4Media project.

1.4. Connection to the project objectives

The project objective related to WP9 is the following:

"SO4: Establish a world-recognised PhD programme on AI. *Build upon collaborations between prominent academic institutions and the industry to groom a new generation of talented experts who will conduct relevant research and develop valuable skills. Cooperate with other networks of excellence to capitalise on aggregated expertise and resources. Strengthen connections between academia and industry through many secondments for PhD students, and internships and exchange programmes for post-docs and researchers. Support the prestige of the programme with symposia, workshops and summer schools, and by achieving academic excellence and industry relevance, to attract talent and provide incentives for it to stay in Europe."*

To achieve the above-mentioned objective, T9.1 builds on creating collaborations with academic institutions and the industry, not only within AI4Media, but with every ICT-48 NoE. The Junior Fellow program established within T9.2 aims to strengthen connections between academia and industry though PhD student secondments. Finally, the work of T9.3 supports the program with prestigious workshops, such as the AI excellence lecture series, and the planned AI mellontology workshop.

Our progress in the respective project Key Performance Indicators (KPI) is the following:

- *KPI4.1: Establishment of PhD programme in AI for media;*

Completion status (100%). The submission of Deliverable D9.1 marks the establishment of AIDA program. AIDA program is in place and AI4Media academic members already offer some of their courses to PhD students. Currently, student enrollment is performed in an ad hoc fashion (e.g., students exchange emails with respective lecturers). In the future, this procedure will be simplified and rectified, thus help with achieving the other KPIs, as well.

- *KPI4.2: >25 internally funded PhD students starting in the programme during the project;*

Completion status (24%). 6 internally (AI4Media) funded students have already expressed their interest in joining the IADA program so far.

- *KPI4.3: >30 PhD students funded by other sources (external multiplicative KPI);*

Completion status (24%). 8 students funded by other sources have already expressed their interest in joining the IADA program so far.

The progress in KPI4.2 and KPI4.3 is relatively good when considering that AIDA program starts this semester, while the registration procedure has not been rectified yet.

- *KPI4.4: >100 secondments, of which >35% between academia/research and industry;*

Completion status (3%). 3 Secondments have been planned during the first 6 months of the project (2 academic and 1 industrial). This KPI was negatively impacted by COVID-19. As a mitigation plan, we will organise “virtual secondments” as well (see Section 3.2). We expect a significant increase over the next few months, considering that the “AI4Media Junior Fellows Program” has just been designed and has not been announced/communicated to the AI community, yet.

- *KPI4.5: 4 summer schools co-organised by the consortium;*

Completion status (75%). 3 Summer schools are currently planned for summer 2021:

- Yearly summer course/e-course on Computer Vision and Machine Learning (AUTH)
- Yearly summer course/e-courses: International Summer School on Artificial Intelligence and Games (UM)
- UCA Deep Learning School (UCA)

They will be announced through the proper communication channels and AIDA website. We do not expect any problems for achieving this KPI in the 4-year term.

- *KPI4.6: >30 new/enriched courses by consortium partners*

Completion status (20%). 6 new/enriched courses are on offer for IADA students. We expect this number to increase by the next semester (Autumn 2021).

2. Formation, management and bookkeeping of the International AI Doctoral Academy

The Section describes the outputs of the work carried out in T9.1. In this section, we detail the information about AIDA formation, activities, and management structure. Section 2.1 defines the AIDA scope, objectives, formal definitions, AIDA governance and committees. Section 2.2 describes the AIDA operations, which includes Management, Education and Training, Dissemination activities as well as special provisions for international co-operation and proper project execution. Finally, Section 2.3 presents the management tools, KPIs and auxiliary files for monitoring the proper execution of AIDA activities.

2.1. AIDA formation

A Memorandum of Understanding has been circulated among AI4Media partners and other ICT-48 project representatives. Its provisions are detailed in the following subsections.

2.1.1. MoU Preamble

EC funded 5 ICT-48 projects on AI to ensure European strategic autonomy in such critical technology as AI, underpinning most of our future professional and private activities, with huge potential socio-economic impact, it is essential to reinforce and build on Europe's assets in AI, including its world-class researcher community, in order to stay at the forefront of AI developments.

The set of networks will form a common resource and will become a shared facility, as a virtual laboratory offering access to knowledge and expertise and attracting the talents. It should become a reference, creating an easy entry point to AI excellence in Europe and should also be instrumental for its visibility.

2.1.2. MoU Scope

Founding and Operation of International AI Doctoral Academy (AIDA) for offering access to knowledge and expertise and attracting PhD talents, operating like an umbrella organization for AI PhD and Postdoc studies and having significant industrial involvement.

2.1.3. AIDA objectives

1. Coordination of the PhD/postdoc educational and training activities on AI of AIDA Members (e.g., access to semester courses/ short courses offered by AIDA Members or Associated Members, organization of/participation in workshops, seminars and conferences).
2. Aiming high to become a world-level reference for anything related to AI education (and research).
3. Defining mechanisms to create inter-university sharing of educational assets in the area of PhD-level AI.

4. Envisage future efforts towards a charter for European universities to share, accredit, and recognize PhD education credits in the area of AI.

2.1.4. AIDA Definitions and Governance

Founding Members: Universities in any of the ICT-48 projects that initially sign this MoU.

Full Members (acronym AIDA Members): Universities having PhD studies on AI from European Union (EU) or Associated Countries that will be invited to and will sign this MoU. Founding AIDA Members are AIDA Members.

Associate Members: International Universities from other countries than EU or Associated ones, having PhD studies on AI, that will be invited to and will sign this MoU.

Research & Industry Members: Research Institutions or Companies with AI activities that will be invited to and will sign this MoU.

Representatives. Representatives of any Member type must have a track record on AI research/education. Representatives of Full Members or Associate Members must be University Full/Associate/Assistant/Emeritus/Retired Professors that have a track record on AI research/education. A Representative may assign a Deputy Representative.

2.1.5. AIDA Governance

General Assembly (GA): It is the highest AIDA governing body consisting of one Representative of each Full Member.

Management Board: It consists of 5 Full Member Representatives and manages AIDA operations. It is elected by the GA for a 4 year term. The number of Management Board members may be changed by GA decision, but cannot be less than 3.

Coordinator: It is a Full Member hosting AIDA Management operations. It is elected by the General Assembly for a 4 year term.

Chair: She/he is the Management Board member, which is the Representative of the Coordinator and chairs AIDA General Assembly, Management Board and Research and Innovation Board.

Research and Innovation Board: It consists of international AI research and industry experts and advises AIDA on research and industrial innovation. It is elected by all AIDA Member Representatives of any type for a 4-year term, or less.

All 4-year terms synchronize with the one of the Management Board.

Sender: AIDA member of any type sending Students or staff to attend AIDA Education and Training activities.

Host: AIDA member of any type organizing an AIDA Education and Training Activity. A Host should be a Full Member or Associate Member, when it comes to courses to be credited.

Student: PhD students or postdoc researchers belonging to any AIDA Sender. AIDA Management Board may decide to expand this definition to other student categories (e.g., MSc students of AIDA members of any type) and may define Student selection criteria.

Lecturer: Academic/teaching personnel of any AIDA Member or Associated Member that: a) offers a course open to AIDA Students and/or b) is supervisor/mentor of an AIDA Student.

AIDA General Assembly or Management Board can decide to create (or dissolve) special committees to work on any AIDA Operation.

2.1.6. AIDA Committees

Table 2.1-1 Management Board

MANAGMENT BOARD		
Name	**e-mail**	**Affiliation**
Prof. Ioannis Pitas (non-voting)	pitas@csd.auth.gr	**Aristotle University of Thessaloniki and AI4Media**
Prof. Nicolò Cesa-Bianchi	nicolo.cesa-bianchi@unimi.it	**University of Milan and Elise**
Prof. Mohamed Chetouani	mohamed.chetouani@sorbonne-universite.fr	**Sorbonne University and HumanE-AI Network**
Assoc. Prof. Fredrik Heintz	fredrik.heintz@liu.se	**Linköping University and TAILOR**
Prof. Barry O'Sullivan	b.osullivan@cs.ucc.ie	**University College Cork and VISION CSA**

Table 2.1-2 AI Curriculum Committee

AI CURRICULUM COMMITTEE		
Name	**e-mail**	**Affiliation**
Chair: Prof. Barry O'Sullivan	b.osullivan@cs.ucc.ie	**University College Cork and VISION CSA**
Prof. Mohamed Chetouani	mohamed.chetouani@sorbonne-universite.fr	**Sorbonne University and HumanE-AI Net**
Prof. Alberto del Bimbo	alberto.delbimbo@unifi.it	**University of Firenze and AI4Media**
Assoc. Prof. Fredrik Heintz	fredrik.heintz@liu.se	**Linköping University and TAILOR**

Prof. Ioannis Pitas (non-voting)	pitas@csd.auth.gr	**Aristotle University of Thessaloniki and AI4Media**

Table 2.1-3 AI Excellence Lecture Series Committee

AI EXCELLENCE LECTURE SERIES COMMITTEE		
Name	**e-mail**	**Affiliation**
Chair: Prof. Mohamed Chetouani	mohamed.chetouani@sorbonne-universite.fr	**Sorbonne University and HumanE-AI Net**
Prof. Peter Flach	Peter.Flach@bristol.ac.uk	**University of Bristol and TAILOR**
Prof. Barry O'Sullivan	b.osullivan@cs.ucc.ie	**University College Cork and VISION CSA**
Prof. Ioannis Pitas (non-voting)	pitas@csd.auth.gr	**Aristotle University of Thessaloniki and AI4Media**
Prof. Nicu Sebe	sebe@disi.unitn.it	**University of Trento and AI4Media**

Table 2.1-4 AI Educational Resource Committee

AI EDUCATIONAL RESOURCE COMMITTEE		
Name	**e-mail**	**Affiliation**
Dr. Kacper Sokol	k.sokol@bristol.ac.uk	**University of Bristol and TAILOR**
Prof. Barry O'Sullivan	b.osullivan@cs.ucc.ie	**University College Cork and VISION CSA**
Prof. Ioannis Pitas (non-voting)	pitas@csd.auth.gr	**Aristotle University of Thessaloniki and AI4Media**

Table 2.1-5 AIDA Dissemination Committee

AIDA DISSEMINATION COMMITTEE		
Name	**e-mail**	**Affiliation**
Dr. Martina Bacaro	martina.bacaro2@unibo.it	**University of Bologna and TAILOR**
Prof. Henning Mueller	henning.mueller@hevs.ch	**HES-SO and AI4Media**
Prof. Ioannis Pitas (non-	pitas@csd.auth.gr	**Aristotle University of**

voting)		**Thessaloniki and AI4Media**

Table 2.1-6 Support Committee

SUPPORT COMMITTEE		
Name	**e-mail**	**Affiliation**
Dr. Gabriel Gonzalez-Castañé	gabriel.castane@insight-centre.org	**University College Cork and VISION CSA**
Dr. Vasileios Mygdalis	mygdalisv@csd.auth.gr	**Aristotle University of Thessaloniki and AI4Media**
Mr Michail Kaseris	kaseris@csd.auth.gr	**Aristotle University of Thessaloniki and AI4Media**
Ms Ioanna Koroni	koroniioanna@csd.auth.gr	**Aristotle University of Thessaloniki and AI4Media**

2.2. AIDA operations and activities

2.2.1. AIDA management

It concerns management, dissemination, book-keeping and reporting of AIDA activities and resources. Management rules and procedures will be decided by AIDA GA or AIDA Management Board and should be compatible with Coordinator's own and/or national legislation, rules and internal procedures. Management will primarily be performed as a funded project by the Coordinator, following Coordinator's own rules and procedures.

2.2.2. AI Education and Training (ET) Activities

- Creation of a joint AI education curriculum, possibly initially consisting of 4 education strands (one per ICT project).
- Offer of semester courses on AI by various AIDA Hosts to AIDA Students, according to the rules and regulations of each AIDA Host.
- Offer of short courses, lecture series, web lectures etc. on AI by various AIDA Hosts to AIDA Students, according to the rules and regulations of each AIDA Host.
- Industry, research or academic secondments.
- Offering AI vision: AI Mellontology workshop and AI grand challenges.
- "AI excellence" lecture series (by world known senior AI researchers).
- "AI sprint" lecture series (by qualified postdocs and young researchers).
- Provisions for students of other backgrounds (e.g., Cognitive Science or Philosophy), also towards European AI branding.
- "AI seniors": qualified AI researchers that can act as an AI topic reference.
- SoA overviews on AI topics (maintained by AI seniors).
- AIDA itinerant lecture series over the world ("AI trobadours")
- AI workshops.

- AI event calendar.

The above is a non-exhaustive list to be updated during AIDA operations. AI curriculum, graduate and short courses will always be on AIDA focus.

All AIDA members of any type are welcomed to participate in AI Education and Training activities on a win-win basis.

2.2.3. Dissemination/communication

They will be done primarily through AIDA www portal www.i-aida.org, various email lists and channels to be managed by the Coordinator and through various AI events.

2.2.4. AIDA resources

AIDA resources come from its members of any type, its activities, funded R&D or educational projects, but also from any other source, e.g., donations or sponsorships.

The activities mentioned in this Memorandum of Understanding shall not, in principle, impose any financial obligations on AIDA members of any type. Each members of any type shall bear its costs and expenses to participate in AIDA, unless otherwise specified and agreed/accepted by the member concerned.

As a general rule, Senders (or their Students themselves) cover the costs for their participation in AIDA ET Activities, using own rules and procedures. Hosts organize AIDA ET Activities and other AIDA operations and cover the related expenses using own rules and procedures. Exceptions to this general rule are allowed.

AIDA Management Board is responsible for approving the yearly budget of AIDA.

2.2.5. AIDA academic rules

A Student can register to become an AIDA Student through AIDA Coordinator, if he/she wishes to get credits for AIDA activities. AIDA Lecturers may need to confirm the status of their own Students. All AIDA Full or Associate Members (Hosts) will be required to offer short/web/full graduate courses on fair own terms, open to AIDA Students. Their relevant AIDA Lecturers notify the Coordinator upon: a) Student registration to a course and b) course completion by a Student (successful or otherwise) and provide any relevant information of any type that will be decided by AIDA Management board. Course credits will be recognized to a Student, according to Sender own rules. Students registered to AIDA will receive an AIDA Certificate of Course Attendance (CCA), possibly also containing other attended AIDA ET Activities, from the Coordinator, acting on behalf of the present AIDA cooperation. CCA only certifies the attended courses, it is NOT a degree, and it is issued after the Students get a minimal number of total credits. CCA format and details will be defined by AIDA GA or Management Board. For the avoidance of doubt, Student degree will always be delivered at the discretion of the corresponding University/Institution of original Student registration only, AIDA not being involved in this procedure in any way.

2.2.6. AIDA international cooperation

AIDA will seek active cooperation with any European, national and international entity engaged in AI activities of any type, notably with any national AI network within EU and with:

- AI4EU (https://www.ai4eu.eu/)
- European AI Alliance (https://ec.europa.eu/digital-single-market/en/european-ai-alliance)
- ELLIS Society (https://ellis.eu/units)
- CLAIRE (https://claire-ai.org/)
- European Association for Artificial Intelligence (EurAI) (https://www.eurai.org/)
- AI Campus (https://ki-campus.org/?locale=en)
- EURASIP (https://www.eurasip.org/)
- euRobotics (https://www.eu-robotics.net/)
- UNITE! (European University network) (https://www.unite-university.eu/about-us)
- IEEE
- ACM.

AIDA can act as an umbrella organization for promoting the educational activities of such entities and networks.

2.2.7. AIDA duration and other provisions

AIDA will start operations once this MoU: a) is signed by at least 5 Founding Members and b) it is endorsed by at least 1 Horizon2020 ICT-48 project. Prospective Members/Associate Members/Research & Industry Members can adhere to this MoU by signing its copy, together with the Coordinator. This MoU is valid for 5 years (2021-2026), that can be extended based on a decision of the AIDA GA.

Decisions of AIDA General Assembly must be taken by a majority vote of all present Full Members. Decisions of Management Board or any other AIDA Board or Committee must be taken unanimously, whenever possible, or by majority vote.

Any AIDA member of any type may refuse to implement a decision, if it is contrary to the law of its country or to the internal rules governing its operation. Every decision on academic activities must comply with the national legislation and academic rules of the members of any type concerned.

AIDA may be terminated by a decision of the AIDA GA to take effect after a 6 months period, so that any outstanding course/activity evaluation has been duly completed, in order to avoid any disadvantage to AIDA Students.

AIDA members of any type are free to leave AIDA, after a 6 months prior notice and, subject, to any outstanding course/activity evaluation has been duly completed, in order to avoid any disadvantage to AIDA Students.

In very exceptional cases of breach of AIDA MoU provisions, AIDA GA may decide to discontinue the membership of a AIDA member of any type, which will take effect after a prior 6 month notice to the affected member.

2.2.8. Personal data protectoin

Personal data, as defined in the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, shall always be treated as Confidential Information, and shall be protected with an adequate level of safety and confidentiality, subject to any applicable legal, regulatory or contractual requirements.

All AIDA Members commit themselves to respect the European Regulation EU 2016/679 (GDPR) as well as the national applicable laws.

Since the processing of Students and other persons personal data is necessary for the performance of this Agreement, all Members commit themselves to agree and enter into data processing agreements, which shall be attached to this MOU to constitute the entire Agreement and reflect each Party's rights and obligations in this respect.

2.2.9. Special provisions during ICT48 project duration

During the period from AIDA start to 31/12/2024:

a) **AIDA organization, governance and activities must facilitate ICT48 projects fulfil their contractual AI education obligations.**

b) The Representative of a Full Member or Research & Industry Member, who also is ICT48 project partner, should be a member of the respective ICT48 project team of this partner. Representative of an ICT48 project to AIDA is a Full Member Representative elected by the respective ICT48 project.

c) Eligible AIDA Management Board members to be voted by GA are Representatives of ICT48 projects. Members of AIDA Management Board are responsible for reporting AIDA activities and decisions to the ICT48 project they represent.

d) Given that AIDA activities shall not, in principle, impose any financial obligations on its members of any type, AIDA resources will come primarily from the participating ICT48 projects, but also from any other source, e.g., donations or sponsorships.

e) Coordinator for the first 4-year term will be the Aristotle University of Thessaloniki, Greece.

f) All AIDA Education and Training activities by Hosts that are ICT48 project partners may be organized primarily at each ICT48 project level. Their promotion will be also implemented through AIDA www portal fed by ICT48 project www pages. AIDA will pay particular attention to graduate course/short course offers, promotion and execution.

g) AIDA Full or Associate Members will offer short/full graduate courses on fair own terms to other AIDA Full or Associate Members.

2.3. AIDA management and bookkeeping

In order to properly execute T9.1, we have devised administrative tools (spreadsheet files, database items, forms etc.) for collecting information about:

- Project KPIs per partner
- AIDA Academic Calendar
- AIDA Students
- AIDA Representatives
- AIDA Lecturers
- AI4Media Secondments
- AIDA Spreading and branding activities

The corresponding templates are included in Appendix A.

3. AIDA curriculum design and academic synergies

Section 3.1 describes the current version of the AI curriculum as designed per Task T9.2 and Section 3.2 overviews the exchange program.

3.1. Curriculum design

The first version of the AIDA curriculum comprises of AI4Media academic partner course offerings. Such include long (semester) courses, short courses, and very short courses. The participation mode may be physical or virtual (web lecture). Long courses may last up to 1 semester (40-70h) and offer 5-7 ECTS points, short courses (16h) offer 1,5 ECTS points, and very short courses (4h) offer 0.5 ECTS points. Depending on University policy, very Short courses can be a part of a Long course. In this case no ECTS are recognized (letter of attendance only).

It should be noted here that AIDA does not mandate any participating entity to recognize ECTS credited by the host university, or the host university to even credit the ECTS. It is up to the sender to recognize the ECTS points.

Student registration is currently done using a very simple procedure. An AIDA student requests to attend a course offered by some university. His own supervisor verifies this request. Then, it is up to the host lecture to take care of the bureaucracy in the host academic institution.

So far three distinct curricula have been designed:

- AI core
- AI and Media
- AI and Society

An AIDA student must collect a number of ECTS points **S** in one of the available curricula to obtain an AIDA certificate. ECTS points may be filled also with Elective courses. More specifically, an AIDA certificate will be credited if a student successfully collects at least a minimum of **X** ECTS from the core courses of the curriculum selected, **Y** ECTS from core courses of the other curricula and **Z** ECTS from Elective courses. The exact numbers **S, X, Y, Z** will be defined by the AIDA Management Board as per AIDA MoU.

Courses will be given in Synchronous mode (live via web) or Asyncronous mode. The Asynchronous courses are planned to appear on the AIDA web platform with appropriate software support next year.

The different academic paths offered by AIDA are summarized in Table 3.1.1.

Table 3.1-1 AIDA academic paths

Certificate name	Base curriculum Requirements	Other curricula requirements	Elective courses requirements
AI Core	A student must collect **X** ECTS points from core courses under the AI Core category	A student must collect at least **Y** ECTS points from core courses under the AI and Media or AI and Society categories	A student may collect up to **Z** ECTS from courses in the Elective courses category
AI and Media	A student must collect at least **X** ECTS from core courses under the AI and Media category	A student must collect at least **Y** ECTS from core courses under the AI Core or AI and Society categories	A student may collect up to **Z** ECTS from courses in the Elective courses category
AI and Society	A student must collect **X** ECTS from core courses under the AI and Society category	A student must collect **Y** ECTS from core courses under the AI Core or AI and Media categories	A student may collect up to **Z** ECTS from courses in the Elective courses category

The Table below summarizes all current AIDA course offerings, while more details are given in Appendix B.

Table 3.1-2 AIDA course offers

Curriculum	Domain	AIDA course offers		
		Course Name	**Course Type**	**ECTS**
AI Core	Machine Learning	Foundations of Pattern recognition and Statistical machine learning	Semester	5
		Machine Learning for Visual Data Analysis	Short	1,5
		Machine Learning for functional, mixed and text data	Semester	5
		Statistical Learning in High Dimensions	Semester	5
		Explainability and Interpretability in machine	Short	1,5

		learning		
	Reinforcement Learning	Introduction to Reinforcement Learning	Short	1,5
	Deep Learning	Introduction to Deep Learning	Semester	6
		Deep Learning 2	Semester	5
		Memory Networks	Short	1,5
		Graph Neural Networks	Semester	5
		Adversarial Learning and Explainable AI	Short	1,5
		Advanced Deep Learning	Semester	5
AI and Media	Visual Media	Computer Vision	Semester	5
		Advanced Computer Vision 1	Semester	7
		Deep Learning for Computer Vision	Short	1,5
		Computer Vision and Deep Learning in Practice	Short	1,5
		Computer Vision Systems	Semester	6
		Computer vision and Machine Learning for Autonomous Systems	Short	1,5
	Music and Sound	Machine Listening for Music and Sound Recognition	Semester	TBD
	Natural Language	Natural Language Processing	Short	1,5
		Speech recognition	Short	1,5
	Multimedia	Multimedia Content Representation	Short	1,5
		Multimedia Classification	Short	1,5
		Multimedia information retrieval	Short	1,5
	Web and Social Media	Web of Data	Semester	5
		Statistical Analysis of Graphs	Semester	5
		Human-Centered Social Media	Very Short	TBD
AI and Society	Human-computer interaction	Affective Computing	Semester	6
		Human-robot interactivity	Short	1,5
	AI Ethics	AI Ethics and Regulation	Semester	5
		IP/IT Law and Emerging Technologies	Short	1,5
Elective courses	Image Processing and Analysis	Image Processing	Semester	5
		Pre-processing of Visual Information	Short	1,5
	Games	Computational Game Creativity	Short	1,5
		Player Modeling: From Game Analytics to Affective Computing	Short	1,5

		Game Artificial Intelligence	Short	1,5
	Media production	Autonomous Systems for media production	Semester	5
		Search Algorithms	Short	1,5

With the aim of a quick activation of AIDA, the AI4Media partners have defined and started the program for the Spring Semester 2021 (as seen in Table 3.1-3):

Table 3.1-3 AIDA program spring 2021

Course	Offered by	Lecturer	Schedule
Graph Neural Networks and Neural-Symbolic Computation	Université Côte d'Azur, France	Prof. Marco Gori and DeepMind	February (5 lectures/labs) 4,11,18,25/2
Machine Learning and Deep Neural Networks	Aristotle University of Thessaloniki, Greece	Prof. I. Pitas	February 17-18/2/2021
Computer Vision and Image Processing	Aristotle University of Thessaloniki, Greece	Prof. I. Pitas	February 24/2/2021 - 25/2/2021
Memory networks	University of Firenze	Prof. Alberto del Bimbo, Federico Becattini	April 2021 (TBD)
Multimedia Data Analysis and Machine Learning	University "Politehnica" of Bucharest, Romania	Prof. Bogdan Ionescu	TBD (starting March 8)
Computer Vision and Machine Learning	Aristotle University of Thessaloniki, Greece	Prof. I. Pitas	CVML Web Lecture Series 17 web courses/topics (TBD).
Explainability and Interpretability in machine learning	HES-SO Valais Techno-Pôle, Switzerland	Prof. Henning Müller Prof. Mara Graziani	TBD.
Explainability in machine learning	University of Bordeaux, CNRS	Prof. Jenny Benois Pineau, Dr. Georges Quenot	TBD
Computational Game Creativity	University of Malta	Dr Antonios Liapis	TBD (starting Monday 22/02 and run for a full semester).
Player Modeling: From Game Analytics to	University of Malta	Prof. Georgios N. Yannakakis	TBD (starting Monday 22/02 and run for a

Affective Computing			full semester)

AIDA programs for Summer and Fall are under definition. We refer the reader to the Appendix B for more details.

3.2. Academic synergies and exchange program

The exchange program is called the **AI4Media Junior Fellows Program.**

The program has the following rationale:

Junior Fellows are PhD students, MS students, and early career postdocs accepted to participate in AI4Media exchanges.

The **program values** are:

1. **Diversity:** Junior Fellows are talented women and men from anywhere in the world working on AI for media & society
2. **Visibility:** AI4Media will hold a yearly ***Junior Fellow Day***: the program will be composed of talks by the Junior Fellows, and thus showcase joint work by partners. Partial travel support will be provided for physical meetings (up to 500 euros), for up to 10 Fellows each year.
3. **Impact:** For publications in **top venues (A* rank)** where the first author is a Junior Fellow presenting joint work between partners, AI4Media will provide partial support for conference travel (up to 500 euros), for up to 10 papers each year

The **Rules for the Junior Fellows Program** are:

1. An exchange involves one **Junior Fellow**, one **Sender** institution, and one **Host** institution.
2. Either the Sender or the Host has to be an AI4Media full member.
3. Exchanges can be **physical**, **virtual**, and **hybrid** (a combination of physical and virtual).
4. AI4Media **coordinator** (CERTH) has a fund reserve for physical exchanges (or the physical part of a hybrid one).
5. The **sender** covers the Junior Fellow's labor expenses, according to the sender's own rates. If the sender is an AI4Media partner, it can use its own AI4Media funds (labor costs).
6. The **host** provides additional support according to its own rules, e.g., assistance to find housing, or any other benefits that can be provided. The host decides on the formal requirements and status of the visitor (e.g. whether certain formalities are needed, visas, etc.).
7. AI4Media **coordinator** supports some costs associated to physical exchanges:
    (a) If the Sender is an AI4Media full partner, then the coordinator transfers the funds to the sender.

(b) If the Host is an AI4Media full partner, then the coordinator transfers the funds to the host, and the host is in charge of transferring them to the Fellow.
(c) In case both are AI4Media full partners, only the sender is supported.

8. Physical exchanges (or the physical part of a hybrid one) have a minimum duration of 1 month and a maximum duration of 3 months.
9. Virtual exchanges can occur at anytime and do not incur in any additional expenses. Virtual exchanges that extend the physical exchange and are highly encouraged.
10. A two-page report is expected to document the results of the exchange (submitted to the Ai4Media coordinator)

NOTE: While the main Program's purpose is to support young researchers, exchanges of senior personnel are also supported

Approval Procedure

AI4Media has formed an Approval Committee composed of (1) A Junior Fellows program coordinator; (2) The WP T9.2 Task Leader; (3) The WP9 Leader; and (4) the Project Coordinator.

For the application, an online form needs to be completed. This form contains:

- Details of sender institution and PI, host institution and PI, and Junior Fellow
- Objectives and relevance to AI4Media and expected outcomes
- Timeline (start date and expected duration) and format (physical, virtual, hybrid)
- The Form is available here:

  https://docs.google.com/forms/d/e/1FAIpQLSeuj4iQzSQANaWCfEvHMRbDIbDMVCiu-4uQ_2NTdyjiDNXFiw/formResponse

Rapid decisions will be made by an Approval Committee and communicated to the partners. There is no limit on the number of exchanges an AI4Media partner can be involved in. On the contrary, participation is encouraged. If this situation changed (e.g. due to an overwhelming number of applications), all AI4Media partners will be informed.

As a final point, the coordinating institution (CERTH) needs to specify the detailed procedure to transfer funds and communicate it to all partners.

4. AIDA website

This Section details the contents of AIDA website www.i-aida.org (Subsection 4.1), as well the future functionalities that will be inserted in the next few months (Subsection 4.2).

4.1. Website structure

We present an overview of the AIDA webpage's structural components and we give a brief description of its current modules. Specifically, the webpage at its present form is comprised of the following fundamental modules:

- **About:** General information about the webpage's purposes.
- **News:** Place of advertisement for new Master/PhD programs related to the field of Artificial Intelligence.
- **PhD Studies**: Informs the visitor about the various course types and the PhD curriculum.
- **Activities:** Upcoming events and lectures are posted in this module.
- **Resources:** The location for storing lecture and course material.

Figure 4-1 depicts the front-page section of the AIDA webpage. The main page contains the title, the logos of the ICT48 projects (AI4Media, Elise, HumanE-AI Net, VISION). The main theme of the webpage is currently represented by a temporary image of a robot symbolising the ability of machines being intelligent. In the top right corner, the menu items correspond to the fundamental modules mentioned above. By pressing the Contact menu item, the user is transferred to the footer section of the page (Figure 4-2), where useful contact details are provided.

Figure 4-1 The front page section of the AIDA webpage.

Figure 4-2 The footer section of the AIDA webpage's start page.

4.1.1. About

This module is dedicated to providing the visitor a detailed description regarding the long-term objectives of the AIDA, as well as the ICT48 programme's goals. Moreover, information and details about the MoU is available for the user. Under this module, one can learn more about the Founding Members of AIDA, its Governance and get informed about the ICT48 projects. The About module contains the following items:

- **Our Vision:** Directs the user to a page where the AIDA's goals are declared and what is the purpose of this initiative.
- **Memorandum of Understanding:** The scope of the MoU, the AIDA's objectives, definitions, governance, operations, duration are described in this specific page in full detail.
- **AIDA Governance**: a page where the management roles are specified as per AIDA MoU.
- **AIDA Committees:** The names and contact details of the people that comprise the management board, the AI Curriculum, AI Excellence Lecture Series, AI Educational Resources, Dissemination and Support committees can be found in this page.
- **Members:** The members that signed or will sign the MoU.
- **ICT48 Projects:** Links to the external webpages of each supporting ICT-48 NoE.
- **Other AI Institutions:** External links to well-known AI institutions such as CLAIR https://claire-ai.org/ and ELLIS https://ellis.eu/units.
- Finally, this module describes the website **Privacy Policy.**

4.1.2. News

Announcements related to AI can be advertised in this section, using the AIDA News menu item. The AIDA News currently serves as a place where a partner can advertise a Master/PhD programme which is related to the field of Artificial Intelligence. Moreover, useful announcements can be made on this page about AI-specific events.

4.1.3. PhD studies

It is the most vital part of the AIDA website. The purpose of this module is to act as a placeholder for the AIDA curriculum and the various course offers. The target group of these course offers is mainly doctoral students and MSc students, interested in the research field of Artificial Intelligence.

As of now, the PhD Studies module contains the AI PhD Curriculum page, where details (ECTS credits, lecturer, course level) about courses can be viewed. University partners can provide their input at the curriculum page by specifying their course's syllabus, credits, lecturer, level of study, language of delivery, etc.

The module's outline is formulated as follows (see Figure 4-3):

- **AI PhD Curriculum:** Courses that will be carried out by the University Partners of AIDA.
- **Semester Course Offers:** Semester courses offered, along with details about the Institution that offers the course, the lecturer, the starting date, the learning outcomes, and details about the enrolment to the course.
- **Short Course Offers:** Short duration courses can be advertised on this page, with the same details as the semester courses.
- **Web Course Offers:** Asynchronous web courses and tutorials can be advertised there.

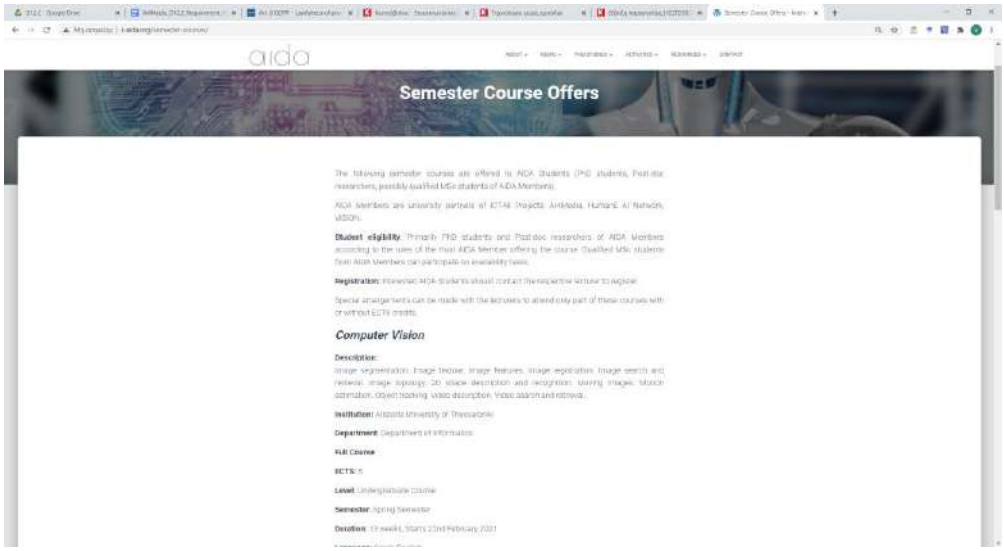

Figure 4-3 PhD studies menu

4.1.4. Activities

The AIDA webpage also advertises upcoming events, such as workshops, conferences, mobility opportunities, as well as the AI Excellence Lecture series, the AI4EU café, the AI Seniors, and the Mobility pages. The most active section of the module is the AI Excellence Lecture Series page, which is an event held every 2 weeks and excellent researchers give a talk about their work. One can be informed about any upcoming event using the AI Excellence Lecture Series page

and can also view the past events. As seen in figure 4-4, AI Excellence Lecture Series is the most visited page.

Page	Pageviews	Percentage
AIDA AI Excellence Lecture Series – International AI Doctoral Academy www.i-aida.org/ai-lectures/	1912	38.70 %
International AI Doctoral Academy www.i-aida.org/	788	15.95 %
Future Lectures – International AI Doctoral Academy www.i-aida.org/future-lectures/	480	9.71 %
Short Course Offers – International AI Doctoral Academy www.i-aida.org/short-courses/	299	6.05 %
Past Lectures – International AI Doctoral Academy www.i-aida.org/past-lectures/	235	4.76 %
AI PhD Curriculum – International AI Doctoral Academy www.i-aida.org/ai-phd-curriculum/	191	3.87 %
Our Vision – International AI Doctoral Academy www.i-aida.org/our-vision-2/	129	2.61 %

Figure 4-4 Frequently visited AIDA pages for February 2021.

4.1.5. Resources

Material and media content (videos, PDFs) can be stored under the Resources module. Interested visitors can find out more about their topics of interest by subscribing to an email list under the AI Email list page. The Resources module contains the following pages:

- **AI Course Repository**
- **Lectures and Workshops Resources**
- **AIDA Mail Lists**
- **AI On-demand Platform**
- **Digital Innovation Hubs**

For instance, material (presentations and YouTube videos) for the past AI Excellence Lecture Series events can be found in the AI Course Repository page.

4.1.6. Contact

Contact details of the webpage coordinators can be found in this module. Additionally, information about important mailing lists can be found in the Contact page. An AIDA mailing list is created to inform prospective and current PhD students, AI experts and lecturers about the events that are to be held in the AIDA webpage, as well as upcoming AI-related conferences.

4.2. Planned use cases and future functionalities

4.2.1. Roles

For the time being, the three proposed roles that are planned to be implemented are: Administrators/moderators, lecturers, and students. The administrators are responsible for the webpage's content maintenance and the approval of validity of the remaining two user groups, i.e. lecturers and students, meaning that only certified lecturers and students of the University partners are eligible to create such an account. The task of an administrator/moderator will be to alter appearance-related content such as menu items, adding events to an event list fixing broken links, adding menu entries and change the overall appearance of the site, if needed (change the webpage's theme). Moreover, an administrator/moderator is assigned with the objective to approve and edit the content proposed by the users bestowed with the lecturer privilege (semester courses, short courses, web courses).

Users entitled to **lecturer** privileges may introduce new content under the following sections:

- Semester Course Offers
- Short Course Offers
- Web Course Offers
- AI Excellence Lecture Series
- AI Course Repository.

Once their proposed content has been approved by the moderators, it will be available online under their respective sections, depending on the type of content. Lecturers can also modify the learning material of their courses, such as slides, PDFs, videos, questionnaires. Finally, lecturers can keep track of the progress of students enrolled in their courses and decide whether a student passed their course (if applicable) and grant the student ECTS credits by successfully participating in the course.

Students will be able to log in their account and access the resources available to them, depending on the courses they are enrolled to. Students may enroll to more than one course, based on their preferences. Additionally, student users can track their progress for each individual course they have enrolled in, and request and print out certificates of attendance or a general.

Upon request of the student, the website should be able to automatically generate a transcript for the student, which the detailed record of a student's performance can be demonstrated in full detail for a specific course. This transcript may be used for certifying the student's attendance to a course and collected ECTS credits.

4.2.2. Interactions and functionalities

As mentioned above, administrative users can interact with the lecturers and the students by approving these users as valid faculty members and as enrolled students, respectively. Another planned functionality granted to students is the option to manage the courses they are subscribed to. Such management actions are to enroll and unsubscribe from a course, view grades and gain access to

course material. A visual environment will be designed to accommodate the interactions described above by exhorting the user to sign into their accounts and access their respective account control panel.

In addition to this visual environment, a dedicated database running on the background is planned to be designed to store all the required information and support the interactions described above. More specifically, this database will store minimal personal information related to a person's details, such as first and last name, role, institution, courses enrolled, courses responsible for, grades, course attendance.

Finally, significant alterations to the entirety of the webpage in terms of appearance are pending to be implemented. First, a customized theme will be designed to give the webpage its own digital identity. To this end, dedicated logos and favicons will be created by a specialized designed team. Further, the frontpage will be reimagined in such a way to make Artificial Intelligence appeal friendlier towards the general audience, as there is a lot of skepticism about the fields of study around Artificial Intelligence. Another functionality improvement will be the addition of an event list, where interested users can easily get updated about upcoming events and courses. The events will be sorted by date and the user will have the ability to filter the events based on their search terms, for example, one can search events regarding upcoming AI Excellence Lecture series. A dedicated search engine within the webpage is also in consideration to enable the user to search events, courses and material based on specified criteria.

5. AI Excellence Lecture Series

AIDA AI Excellence Lecture series is an initiative organized by the respective AI Excellence Lecture Series Committee. It offers high quality scientific lectures on several current hot AI topics. Lectures are offered alternatingly by:

- Top highly cited senior AI scientists internationally, or
- Junior AI scientists with promise of excellence (AI sprint lectures).

Lectures are typically held once per week, Tuesdays 17:00-18:00 CET (8:00-9:00 am PST), (10:00 am-11:00am CST). Attendance is free. Each lecture lasts 60 minutes (45 minutes plus questions).
More information about the planned lectures is given in http://www.i-aida.org/ai-lectures/. Lectures are uploaded to the AIDA YouTube channel immediately after taking place: https://www.youtube.com/channel/UCZgLH0CsLNMUCTLQRqry4qA.

At the time of writing, three Lectures have been organized and attracted on average more than 250 participants (see Figures 5-1-5-3):

- AI Excellence Lecture Series 1 – Prof. Tinne Tuytelaars: 'Keep on learning without forgetting'. Lecture date: January 26th 2021, https://youtu.be/O6Kjdrp62IQ

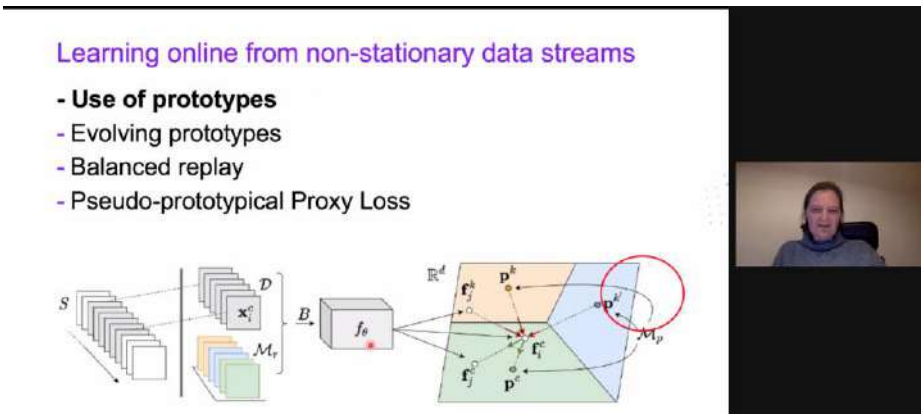

Figure 5-1 Prof. Tinne Tuytelaars: 'Keep on learning without forgetting

- AI Excellence Lecture Series 2 - Prof. Efstratios Gavves: Machine Learning of Time: Past and Future, Lecture date: 9th February 2021, https://youtu.be/1e_JxHfkJHQ

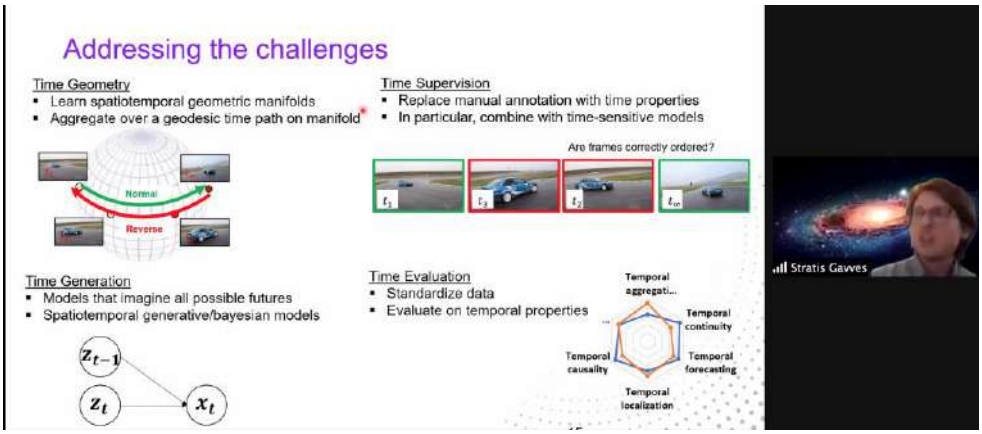

Figure 5-2 Prof. Efstratios Gavves: Machine Learning of Time: Past and Future

- AI Excellence Lecture Series 3 Lecture by Prof. Pietro Perona: "Measuring algorithmic bias in face analysis — towards an experimental approach". Lecture date: 23rd February 2021. https://youtu.be/Jgch1z-jLv8

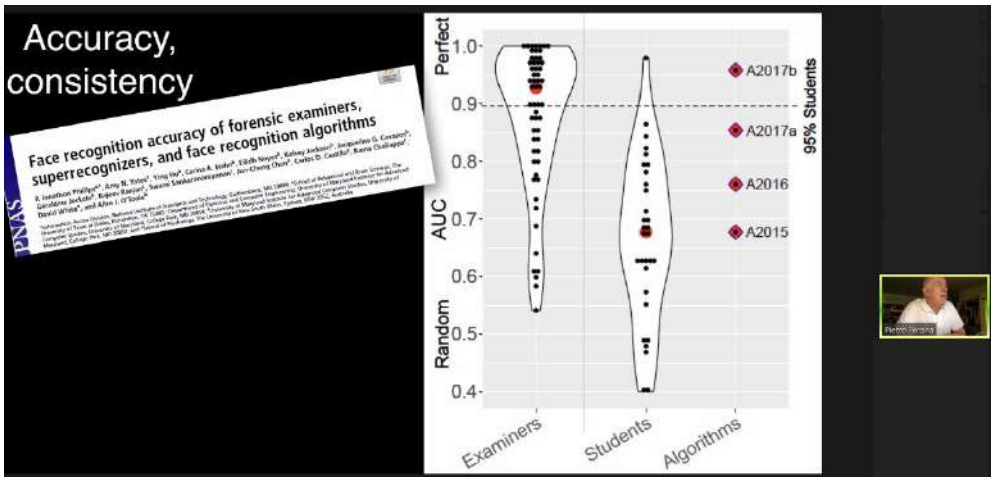

Figure 5-3 Prof. Pietro Perona: Measuring algorithmic bias in face analysis — towards an experimental approach

The planned lectures include:

- Lecture by Prof. Björn Schuller: There will be Artificial Emotional Intelligence.
  Tuesday 9th March 2021 17:00 – 18:00 CET (8:00-9:00 am PST), (10:00 am-11:00am CST). Link to attend the lecture: https://authgr.zoom.us/j/91839826029

- Lecture by Prof. Andreas Geiger: Towards Robust End-to-End Driving

Tuesday 23rd March 2021 17:00 – 18:00 CET (8:00-9:00 am PST), (10:00 am-11:00am CST). Link to attend the lecture: https://authgr.zoom.us/j/92425987539

AIDA AI excellence Lecture committee remains very active and remains in contact with may more lecturers. All results of this effort will be reported analytically in AI4Media Deliverable D9.3.

6. Conclusions

This deliverable summarized the overall effort carried out for AIDA creation from the scope of AI4Media project. It overviewed the progress in each of the respective WP9 tasks. Although the overall effort to fully utilize and operate the AIDA doctoral academy is huge, we have managed to split our efforts and join our forces to realize AIDA operation from M7.

In the future, our plan is to incorporate additional curricula and activities from inputs by the other ICT-48 project academic partners. The most recent curriculum will also appear in the AIDA website. Future efforts in AIDA activities will be reported in Deliverables D9.2, D9.3 and D9.4 on M24, M36 and M48, respectively.

Appendix A: AIDA management tools

In Subsections below, we include the administrative tool templates described in Section 2.3.

A.1 AIDA KPI monitoring

Table A1-1 KPI monitoring table

General KPIs				
KPI	**Title**	**Status**	**Target**	**Achievement status (%)**
KPI4.1	Establishment of PhD programme in AI for media			
KPI4.2	25 internally funded PhD students starting in the programme during the project;			
KPI4.3	30 PhD students funded by other sources (external multiplicative KPI);			
KPI4.4	100 secondments, of which >35% between academia/research and industry;			
KPI4.5	4 summer schools co-organised by the consortium;			
KPI4.6	30 new/enriched courses by consortium partners.			

Table A1-2 KPI monitoring per partner

		Detailed per partner							
		KPIs							
		KPI 4.2	**KPI 4.3**	**KPI4.4 (senders complete only)**				**KPI 4.5**	**KPI4.6**
				Academic secondments	**Industrial secondments**	**Total**	**Details**		
Part	KU Leuven								

ner	UNITN								
	UNIFI								
	AUTH								
	QMUL								
	UPB								
	UvA								
	UM								
	HES-SO								
	CERTH								
	CEA								
	Fraunhofer-Gesellschaft								
	3IA								
	CNR								
	BSC								
	IDIAP								
	IRCAM								
	JR								
	IBM								
	ATC								
	NISV								
	DW								
	VRT								
	RAI								
	IDF								
	F6S								
	LOBA								

	MODL								
	IMG								
	GAR								
	Total								
	Target								

A.2 AIDA members - students – representatives – lectures

Table A2-1 AIDA student details

AIDA students								
AIDA Student name	**Email**	**University**	**Department**	**ICT48 project**	**Level**	**Supervisor/ mentor**	**Other contact details**	**Courses passed (Name, Course type, Hours, ECTS, Mark)**

Table A2-2 AIDA representatives

AIDA representatives					
AIDA Full Member Name	**Official Name**	**ICT48 project**	**Member Representative to AIDA**	**Deputy Representative**	**Other contact details**
AI4Media					
Universities					
Research Institutes and companies					
ELISE					
Universities					

Research Institutes and companies					
Humane-AI-Net					
Universities					
Research Institutes and companies					
VISION CSA					
Universities					
Research Institutes and companies					
TAILOR					
Universities					
Research Institutes and companies					

Table A2-3 AIDA lectures

AIDA lecturers								
AIDA lecturers/mentors	**Email**	**AIDA member of any type**	**Department**	**ICT48 project**	**Level**	**Other contact details**	**Courses offered**	**Supervised AIDA PhD Students/postdocs**

Table A2-4 Academic Calendar

Academic Calendar							
		Spring Semester 2021		Summer Semester 2021		Fall Semester 2021	
Institution	Are PhD courses mandatory?	Semester start	Semester end	Semester start	Semester end	Semester start	Semester end

Table A2-5 AI4Media Secondments Application (Responses)

AI4Media Secondments Application (Responses)																						
Timestamp	Visiting Organization	If "Other" please describe	If not an AI4Media partner please complete	PI of Visiting Organization (Name, Email)	Researchers involved from Visiting side (Name, Email)	Hosting Organization	If "Other" please describe	If not an AI4Media partner please complete	PI of Hosting Organization (Name, Email)	Researchers involved from Hosting side (Name, Email)	Objective and relevance to AI4Media	Expected Results	Start Date	Expected Duration	Format of the visit	Will request financial support	Visitor	Other information	Approved by WP9	Comments	Visit Outcome	Specific Results (publications etc)	Other information

Table A2-6 AI4Media mobility plan 2020-2021

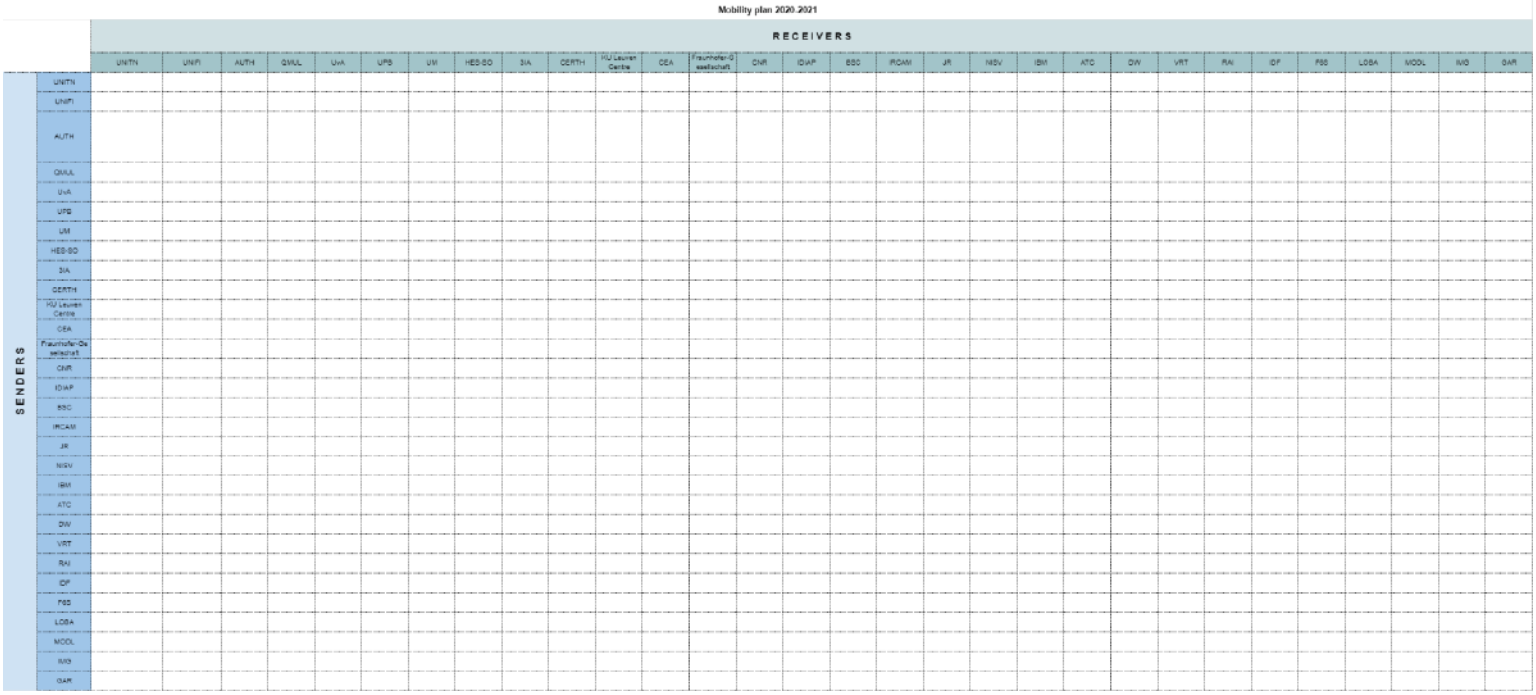

Table A2-7 AIDA Spreading and branding activities

AIDA Spreading and branding activities			
Partner	**2. Contribution to spreading European AI excellence (T9.3): All: short / summer course / e-courses, workshops / conferences or any other activities you plan to organize that are relevant to AI.**	**Events Awaiting endorsement**	**Events Endorsement Granted**

Appendix B: AIDA curriculum design

In the Sections below we detail the information for each course in the AIDA curriculum. ECTS points and other information may change from the current version.

B.1 AI Core Courses

B.1.1 Machine Learning

- Foundations of Pattern recognition and Statistical machine learning - AUTH

Credits and details: ECTS 5, Semester course, Spring semester

Participation: teleconference/tele-exams/project

Lecturer: I. Pitas, pitas@csd.auth.gr

Syllabus: Random variables and vectors. Decision functions. Classification algorithms utilizing decision functions. Classification based on distance. Classification based on decision theory. Principal component analysis. Linear discriminant analysis. Estimation of probability distribution parameters. Analysis of similarity and web graphs. Syntactic pattern recognition. Vector quantization techniques. Programming assignments in C/C++ and MATLAB. https://qa.auth.gr/en/class/1/600121270/M1.

- Machine Learning for Visual Data Analysis - QMUL

Credits and details: ECTS 1,5, Short course, TBD

Lecturer: TBD

Syllabus: TBD.

- Machine Learning for functional, mixed and text data - 3IA-UCA

Credits and details: ECTS 5, Semester course, Fall semester

Lecturer: C. Bouveyron, Frederic Precioso, Marco Winckler

Syllabus: visual mining, time series clustering and embedding, statistical models on graph data, embedding of heterogeneous (structured and unstructured data) http://web.univ-cotedazur.fr//en/idex/formations-idex/data-science/).

- Statistical Learning in High Dimensions - 3IA-UCA

Credits and details: ECTS 5, Semester course, Fall semester

Lecturer: C. Bouveyron, P.-A. Mattei

Syllabus: statistical analysis of high-dimensional data for classification, clustering, regression, and collaborative filtering, study of sparse methods (lasso, elastic net, sparse Bayesian methods), probabilistic PCA (and mixtures thereof), nuclear norm penalization. Labs in R and Python.

- Explainability and Interpretability in machine learning - TBD

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: TBD.

B.1.2 Reinforcement Learning (TBD)

- Introduction to Reinforcement Learning - UNIFI

Credits and details: ECTS 1,5 Short course, Fall semester

Lecturer: Andrew D. Bagdanov

Syllabus: TBD.

B.1.3 Deep Learning (UNIFI)

- Introduction to Deep Learning - UNITN

Credits and details: ECTS 6, Semester course, Spring semester

Lecturer: Elisa Ricci (e.ricci@unitn.it)

Syllabus: The course aims to provide students with an overview of the main models and applications of deep learning. In particular, the first part of the course will introduce the basic concepts related to deep learning and to the training of artificial neural networks (Backpropagation, Dropout, BatchNorm, ...). In the second part, the main types of neural models will be presented. Convolutional Neural Networks, Recurrent Neural Networks, Generative Adversarial Networks, Deep Reinforcement Learning will be introduced. In the final part of the course some applications of deep learning will be presented in the field of computer vision, robotics and natural language processing. Theoretical discussion will be complemented with lab in Python using open-source deep learning libraries.

- Deep Learning 2 -3IA-UCA

Credits and details: ECTS 5, Semester course, Fall semester

Lecturer: M. Riveill, D. Lingrand

Syllabus: CNN, RNN, attention models for RNN, hyper-parameter tuning, convolutional and variational auto-encoders, Applications to (1) NLP: Word embedding, Sentiment analysis, Naming Entity Recognition, Part of speech tagging, (2) image processing: feature and image extraction, image denoising.

- Memory networks - UNIFI

Credits and details: ECTS 1,5 Short course, Spring semester

Lecturer: Federico Becattini, Alberto del Bimbo

Syllabus: Memory Networks, Recurrent networks, LSTM, Stacked and bidirectional LSTM, Memory Augmented Neural Networks, Neural Turing Machines, hands on, Applications.

- Graph Neural Networks - 3IA-UCA

Credits and details: ECTS 5, Semester course, Fall semester (Not available this year)

Lecturer: M. Gori

Syllabus: TBD.

- Adversarial Learning and Explainable AI - UNIFI

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: P. Frasconi

Syllabus: The first will be structured in two subsections. In the first part the course will revise some evasive and poisoning attacks to learning systems and ideas for defending against them. In the second part the curse will address some approaches to interpretability in machine learning.

- Advanced Deep Learning - 3IA-UCA

Credits and details: ECTS 5, Semester course, Fall semester

Lecturer: F. Precioso, P.-A. Mattei

Syllabus: Deep neural architectures for multi-modal media data, Deep generative models, Generative Adversarial Networks, Bias mitigation, Deep

networks interpretation and explanation, latest research challenges in DL (double gradient descent, exponential learning rate, etc.).

B.2 AI and Media courses

B.2.1 Visual media (AUTH)

- Computer Vision - AUTH

Credits and details: ECTS 5, Semester course, Spring semester

Participation: teleconference/tele-exams/project

Lecturer: I. Pitas, pitas@csd.auth.gr, https://qa.auth.gr/en/class/1/600180123

Syllabus: TBD.

- Advanced Computer Vision 1 - AUTH

Credits and details: ECTS 7, Full course, Semester course, Fall semester

Participation: teleconference/tele-exams/project

Lecturer: I. Pitas, pitas@csd.auth.gr, https://qa.auth.gr/en/class/1/600177048

Syllabus: Image acquisition. Mathematical modeling of image formation. Introduction to image processing and analysis. Camera calibration. Stereo vision. Depth estimation. Object localization. 3D image analysis. Surface geometry. Object topology. Object landmarks and features. Object recognition. Object registration. Object description. Applications in medical imaging, image retrieval, robotic vision.

- Deep Learning for Computer Vision - QMUL (TBD)

Credits and details: ECTS 1,5, Short Course, TBD,

Lecturer: TBD

Syllabus: TBD.

- Computer Vision and Deep Learning in Practice - UNIFI

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: M. Bertini, L. Seidenari, T. Uricchio)

Syllabus: TBD.

- Computer Vision Systems - UNITN

Credits and details: ECTS 6, Semester course, Fall semester

Lecturer: Nicu Sebe & Elisa Ricci (niculae.sebe@unitn.it, e.ricci@unitn.it)

Syllabus: This course will prepare the students in both the theoretical foundations of computer vision as well as the practical approaches to building real Computer Vision systems. This course investigates current research topics in computer vision with an emphasis on recognition tasks and deep learning. We will examine data sources, features, and learning algorithms useful for understanding and manipulating visual data. The goal of this course is to give students the background and skills necessary to perform research in computer vision and its application domains such as robotics. Students should understand the strengths and weaknesses of current approaches to research problems and identify interesting open questions and future research directions. Topics covered will include object detection and segmentation with deep networks, deep generative models for image generation, image captioning, activity recognition, video generation, deep transfer learning and few-shot learning.

- Computer vision and Machine Learning for Autonomous Systems - AUTH

Credits and details: ECTS 1,5, Short course, Spring semester,

Participation: local/exams/project

Lecturer: I. Pitas, pitas@csd.auth.gr

Syllabus: TBD.

B.2.2 Music and Sound (IDMT)

- Machine Listening for Music and Sound Recognition - IDMT

Credits and details: No ECTS, 4 lectures + 3 seminars, Winter semester

Participation: teleconference

Lecturer: J. Abeßer, jakob.abesser@idmt.fraunhofer.de, https://machinelistening.github.io

Syllabus: Lecture 1: Introduction to Audio Representations. Lecture 2: Introduction to Machine Learning. Lecture 3: Music Information Retrieval. Lecture4: Machine Listening for Environmental Sounds.

B.2.3 Natural Language (TBD)

- Natural Language Processing - TBD

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: TBD.

- Speech recognition - TBD

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: TBD.

B.2.4 Multimedia (TBD)

- Multimedia Content Representation - UPB

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: Introduction, Data representation, Content description (color, shape, texture, motion, temporal structure, interest points, audio, text), Normalization, Decorrelation. Programming assignments in C/C++ and MATLAB.

- Multimedia Classification - UPB

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: Introduction, Clustering: data similarity, hierarchical clustering, k-means, Classification: k-NN, Support Vector Machines. Programming assignments in C/C++ and MATLAB.

- Multimedia information retrieval - CNR, HES-SO

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: several example application domains; the course can include a large part on evaluation and benchmarking of multimedia retrieval (ImageCLEF, MediaEval).

B.2.5 Web and Social Media (3IA)

- Web of Data - 3IA-UCA

Credits and details: ECTS:5, Semester course, Fall semester

Lecturer: C. Faron

Syllabus: Principles of a Web of Linked Data, the RDF Data Model to publish and link data on the Web, the SPARQL query language, Integration of other data formats and sources.

- Statistical Analysis of Graphs - 3IA-UCA

Credits and details: ECTS:5, Semester course, Fall semester

Lecturer: K. Avrachenkov

Syllabus: Network inference: estimation of network characteristics (diameter, edge conductances, etc.), testing hypotheses regarding graph structure, rumor source detection, network tomography; Network algorithms: distributed learning and optimization, clustering.

- Human-Centered Social Media - IDIAP

Credits and details: No ECTS credits, Very Short Course, TBD (can be offered as part of a summer or winter school).

Lecturer: D. Gatica-Perez, gatica@idiap.ch

Syllabus: The course presents a human-centered, multidisciplinary view of social media. It integrates concepts from media studies, multimedia information systems, and machine learning to understand user motivations and behavior, and analyze content of socio-technical systems like Twitter, Facebook, and YouTube. Students will become familiar with approaches for classification, discovery, and interpretation of social media phenomena.

B.3 AI and society courses

B.3.1 Human-computer interaction (UNITN)

- Affective Computing - UNITN

Credits and details: ECTS 6, Semester course, Fall semester

Lecturer: N. Sebe, niculae.sebe@unitn.it

Syllabus: This course explores computing research that relates to, arises from, or deliberately influences emotion. The aim is to identify the important research issues, and to ascertain potentially fruitful future research directions in relation to the multimodal emotion analysis and to human-computer interaction. The course will introduce key concepts, discuss technical approaches, and open issues in the following areas: interaction of emotion with cognition and perception; the role of emotion in human-computer interaction; the communication of human emotion via face, voice, physiology, and behavior; construction of computers that have skills of emotional intelligence; the development of computers that "have" emotion; and other areas of current research interest in the research community.

- Human-robot interactivity - TBD

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: TBD.

B.3.2 AI Ethics (KUL)

- AI Ethics and Regulation - KUL

Credits and details: ECTS 5, Semester course, Spring semester

Lecturer: P. Valcke & A. Vedder

Syllabus: online materials covering following topics: *Requirements of trustworthy AI: Ethical and legal perspectives, critical discussion and implementation (autonomy and personhood; safety and security; justice; enforcement and regulatory oversight); *Dual Use: ethical backdrop, policies and implementation; *Comparison EU with non-EU perspectives on ethical / trustworthy AI; *Case studies (including media & fake news).

- IP/IT Law and Emerging Technologies - KUL

Credits and details: ECTS: 1,5, Short Course, Spring semester

Lecturer: D. Burk

Syllabus: online materials covering following topics: *emerging legal issues in the fields of intellectual property rights, liability, privacy and data protection in relation to new technologies, in particular Artificial Intelligence, Nanotechnology, Neurotechnology, Biotechnology and Robotics.

B.4 AI4Media Elective courses

B.4.1 Image Processing and Analysis (AUTH)

- Image Processing - AUTH

Credits and details: ECTS:5, Semester course, Spring semester

Participation: teleconference/tele-exams/project

Lecturer: I. Pitas, pitas@csd.auth.gr

Syllabus: Digital image recording/digitization. Image enhancement and filtering. Image restoration. Digital image compression and related standards (e.g. JPEG/JPEG2000). Edge detection algorithms. Image segmentation. Shape description. Programming assignments in C/C++ and MATLAB. https://qa.auth.gr/en/class/1/600176703).

- Pre-processing of Visual Information - UPB

Credits and details: ECTS 1,5, Short Course, TBD, 6-8 hours

Lecturer: TBD

Syllabus: Introduction & applications, Image/video representation, Color representation, Point operations, Linear/non-linear filtering. Programming assignments in C/C++ and MATLAB.

B.4.2 Games (UM)

- Computational Game Creativity - UM

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: Introduction, Level & World Generation, Rules and Mechanics, Experience-driven Procedural Content Generation (PCG), Visuals & Audio, Narrative, Mixed-Initiative PCG, Evaluating PCG The study-unit includes a study of the different game facets from the perspective of human authors, presents the state-of-the art in procedural content generation within games, and connects them to instances of computational or mixed-initiative creativity outside of games (e.g. parametric design in architecture, generative art, procedural audio). Computational game creativity is positioned at the intersection of developing fields within games research, such as procedural content generation and AI-assisted design, and long-studied fields, such as visual art and narrative.

- Player Modeling: From Game Analytics to Affective Computing - UM

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: Revisiting game artificial intelligence. The role of Player Modeling, Basic data analysis, data preprocessing and descriptive statistics, Classification and prediction, Clustering, Data Visualization, Industrial game analytics - problems and needs, Theories of emotion (affect and cognition), The Affective Loop: key components, Eliciting Emotion (protocols and approaches), Recognizing and Modelling Emotion, The model's input (Speech, eye gaze, physiology, images, movement/posture), Feature Extraction / Selection, The model's output (affect annotation / ranks, ratings, ground truth), A taxonomy of modelling approaches, Pattern recognition, Classification, Regression, Preference Learning, Expressing Emotion (via agents and virtual environments), Closing the affective loop: Adaptation via agents and virtual environments, Player Experience Modeling, Popular application domains: computer games, HCI, health etc.

- Game Artificial Intelligence - UM

Credits and details: ECTS 1,5, Short Course, TBD

Lecturer: TBD

Syllabus: Introduction to Game AI, Representation and Utility, Play games, Tree Search and Monte Carlo Tree Search, Play via Supervision, Play via Reinforcements, Play via Evolutionary and Genetic Algorithms, Play for Winning, Diversity and Testing. The study-unit aims to introduce students to the theory of basic and advanced game artificial intelligence topics and provide hands-on experience on the implementation of popular algorithms on commercial-standard games. Course page: https://sites.google.com/view/msc-in-digital-games-2020/idg5301-game-ai.

B.4.3 Media production

- Autonomous Systems for media production - AUTH

Credits and details: ECTS 5, Semester course, Spring semester

Participation: teleconference/tele-exams/project

Lecturer: I. Pitas, pitas@csd.auth.gr

Syllabus: TBD https://qa.auth.gr/en/class/1/600176703.

- Search Algorithms - TBD

Credits and details: ECTS 1,5, Short Course, Graduate TBD

Lecturer: TBD

Syllabus: TBD.

B.5 AIDA program Spring 2021

B.5.1 Graph Neural Networks and Neural-Symbolic Computation

Université Côte d'Azur, France

Teacher: Prof. Marco Gori marco.gori@unisi.it. and DeepMind

Schedule: February (5 lectures/labs) 4,11,18,25/2, in English

Syllabus: This is an introductory course to the theory and applications of Graph Neural Networks (GNN) and to related topics in Neural-Symbolic Computation. The course gives the foundations on neural computation involving patterns represented by graphs in fields ranging from computer vision to bioinformatics. In addition, GNN will be presented for different applications in the case of graph-based domains, where inferential processes are expected to involve also the neighbors of vertexes (e.g. social networks). Finally, the diffusion mechanisms taking place by GNN will be integrated with more general Neural-Symbolic models where the decision mechanisms need to be coherent with external representations of environmental knowledge.

B.5.2 Machine Learning and Deep Neural Networks

Aristotle University of Thessaloniki, Greece

Teacher: Prof. I. Pitas

Schedule: February 17-18/2/2021

Syllabus: Introduction to Machine Learning, Artificial Neural Networks, Perceptron, Multilayer perceptron. Backpropagation, Deep neural networks. Convolutional NNs, Deep learning for object detection, Deep Semantic Image Segmentation, Generative Adversarial Networks, Recurrent Neural Networks. LSTMs, Data Clustering, Decision Surfaces. Support Vector Machines, Distance-based Classification, Dimensionality Reduction, Kernel Methods, Bayesian Learning, Deep Reinforcement Learning, CVML Software Development Tools.

B.5.3 Computer Vision and Image Processing

Aristotle University of Thessaloniki, Greece

Teacher: Prof. I. Pitas

Schedule: February 24/2/2021 - 25/2/2021

Syllabus: *Image Processing***:** Introduction to Image Processing and Computer Vision, Image Formation, Image Sampling, 2D Systems, Image Transforms, Fast 2D Convolution Algorithms, Image Perception, Image Filtering. *Computer Vision*: Edge Detection, Region Segmentation, Texture Description, Shape Description, Image Acquisition, Camera Geometry, Stereo and Multiview Imaging, Structure from Motion, 3D Robot Localization and Mapping, Object Tracking.

B.5.4 Memory networks

University of Firenze

Teacher: Prof. Alberto del Bimbo, Federico Becattini

Schedule: April 2021 (TBD)

Syllabus: Neural networks with memory capabilities have been introduced to solve several machine learning problems which require to model a temporal dimension. The most common models are Recurrent Neural Networks and their variants such as Long-Short Term Memories (LSTM) and Gated Recurrent Units (GRU). More recently Memory Augmented Neural Networks have been suggested to overcome the limitations of RNNs. The principal characteristic of this model is the usage of a controller network with an external element-wise addressable memory. Differently from RNNs, state to state transitions are obtained through read/write operations and a set of independent states is maintained. An important consideration is that in Memory Networks the number of parameters is not tied to the size of the memory. They have been defined both with episodic and permanent external memories. The course will discuss memory networks at large and their applications.

B.5.5 Multimedia Data Analysis and Machine Learning

University "Politehnica" of Bucharest, Romania

Teacher: Prof. Bogdan Ionescu

Schedule: TBD (starting March 8), 14 x 2 hours track (+14 x 2 lab hours ev.)

Syllabus: Data pre-procesing and multimedia content representation. Data clustering Data classification.

B.5.6 Computer Vision and Machine Learning

Aristotle University of Thessaloniki, Greece

Teacher: Prof. I. Pitas

Schedule: CVML Web Lecture Series 17 web courses/topics (TBD).

B.5.7 Explainability and Interpretability in machine learning

HES-SO Valais Techno-Pôle, Switzerland

Teacher: Prof. Henning Müller henning.mueller@hevs.ch Prof. Mara Graziani mara.graziani@hevs.ch

Schedule: TBD**.**

B.5.8 Explainability in machine learning

University of Bordeaux, CNRS

Teacher: Prof. Jenny Benois Pineau jenny.benois-pineau@u-bordeaux.fr, Dr. Georges Quenot Georges.Quenot@imag.fr

Schedule: TBD.

B.5.9 Computational Game Creativity

University of Malta

Lecturer: Dr Antonios Liapis

Schedule: TBD (starting **Monday 22/02** and run for a full semester).

Syllabus: Introduction, Level & World Generation, Rules and Mechanics, Experience-driven Procedural Content Generation (PCG), Visuals & Audio, Narrative, Mixed-Initiative PCG, Evaluating PCG The study-unit includes a study of the different game facets from the perspective of human authors, presents the state-of-the art in procedural content generation within games, and

connects them to instances of computational or mixed-initiative creativity outside of games (e.g. parametric design in architecture, generative art, procedural audio). Computational game creativity is positioned at the intersection of developing fields within games research, such as procedural content generation and AI-assisted design, and long-studied fields, such as visual art and narrative.

Course page: https://sites.google.com/view/msc-in-digital-games-2020/idg5155-computational-game-creativity.

B.5.10 Player Modeling: From Game Analytics to Affective Computing

University of Malta

Lecturer: Prof. Georgios N. Yannakakis

Schedule: TBD (starting **Monday 22/02** and run for a full semester)

Syllabus: Revisiting game artificial intelligence. The role of Player Modeling, Basic data analysis, data preprocessing and descriptive statistics, Classification and prediction, Clustering, Data Visualization, Industrial game analytics – problems and needs, Theories of emotion (affect and cognition), DThe Affective Loop: key components, Eliciting Emotion (protocols and approaches), Recognizing and Modelling Emotion, The model's input (Speech, eye gaze, physiology, images, movement/posture), Feature Extraction / Selection, The model's output (affect annotation / ranks, ratings, ground truth), A taxonomy of modelling approaches, Pattern recognition, Classification, Regression, Preference Learning, Expressing Emotion (via agents and virtual environments), Closing the affective loop: Adaptation via agents and virtual environments, Player Experience Modeling, Popular application domains: computer games, HCI, health etc.

Course page: https://sites.google.com/view/msc-in-digital-games-2020/idg5159-player-modeling.

B.6 AIDA program Summer 2021

B.6.1 UCA Deep Learning School 2021

Université Cote d'Azur

Format (each module as a Very Short Course):

- Modules dedicated to beginners. Each module ranges in duration for 40'' to 50''.
- Deep Learning Expert labs. Each lab is designed around practical cases and covers an independent topic. Each module ranges in duration for 4h approx

Teachers: TBD

Schedule: 1 week in June or July (TBD).

B.7 AIDA program fall semester (starting in October - draft)

B.7.1 Fundamentals of Image Processing and Analysis

University "Politehnica" of Bucharest, Romania

Teachers: Prof. Bogdan Ionescu

Schedule: TBD 14 x 2 hours

Syllabus: Color representation, Geometric transformations, Point operations, Linear filtering, Non-linear filtering, Morphology, Unitary transforms.

B.7.2 Game Artificial Intelligence

University of Malta

Lecturer: Prof. Georgios N. Yannakakis

(Very) Short Course, Graduate (4h / 16h)

Syllabus: Introduction to Game AI, Representation and Utility, Play games, Tree Search and Monte Carlo Tree Search, Play via Supervision, Play via Reinforcements, Play via Evolutionary and Genetic Algorithms, Play for Winning, Diversity and Testing. The study-unit aims to introduce students to the theory of basic and advanced game artificial intelligence topics and provide hands-on experience on the implementation of popular algorithms on commercial-standard games. Course page: https://sites.google.com/view/msc-in-digital-games-2020/idg5301-game-ai.

B.8 AIDA PROGRAM ON-LINE TUTORIALS - Video material

B.8.1. Multiple Parametric Models Fitting

Teachers: Proff. Luca Magri luca.magri@polimi.it *Politecnico Milano,* Andrea Fusiello andrea.fusiello@uniud.it Eleonora Maset eleonora.maset@uniud.it *Univ. Udine,* I, D. Barath CMP, CZ, G. Xiao

Syllabus: Estimation of multiple parametric models that fit data corrupted by noise and outliers in Computer Vision applications. Multi-model fitting problem as a labeling energy minimization procedure assigning data points to model instances. Perspective based on preference analysis: the estimation of multiple

structure is addressed in a procedural way leveraging on simple to implement clustering techniques. Perspective based on hypergraphs.

B.8.2 Synchronization: a general framework for mosaicking, 3D reconstruction, matching and segmentation problems

Teachers: Proff. F. Arrigoni, E. Maset, A. Fusiello *Univ. Udine, I,* F. Bernard *Technical University of Munich, D, I*

Syllabus: The synchronization problem in Computer Vision to infer the unknown states of a network of nodes, where only the ratio between pairs of states can be measured. synchronization in structure from motion, pose graph optimization, point coordinates in 3D registration, image mosaicking and motion segmentation.

B.8.3 Change and Anomaly Detection in Images, Signals and datastreams

Teachers: Proff. Giacomo Boracchi giacomo.boracchi@polimi.it , *Politecnico di Milano, I,* Diego Carrera diego.carrera@st.com *ST Microelectronics, I*

Syllabus: Change and anomaly-detection in signal/image analysis following the machine-learning perspective of supervised, semi-supervised and unsupervised monitoring tasks. Traditional models: autoencoders, learned projections and dictionaries yielding sparse representations. Deep learning models: CNNs, deep-one-class classifiers and deep generative models. Examples.

B.8.4 Graph-based Methods for Learning and Inference Problems in Pattern Analysis

Teachers: Proff. Antonio Robles-Kelly antonio.robles-kelly@deakin.edu.au, *CSIRO AU*, Francisco Escolano Ruiz escolano.ua@gmail.com *Univ. of Alicante, E*

Syllabus: Graph-based methods in pattern recognition. The course aims at covering the fundamental principles of stochastic, spectral, probabilistic and manifold based methods related with graphs and their applications to segmentation and grouping, matching, classification and recognition. It also cover recent trends and developments related to deep networks and link inference in the structural pattern analysis space.

B.8.5 High-Dynamic-Range imaging: history, state of the art, improvements and limits

Teachers: Prof. Alessandro Rizzi alessandro.rizzi@unimi.it *Politecnico Milano, I*

Syllabus: Description of the dynamic range problem. Possible goals of the HDR pipeline: reproducing light field, reproducing appearance, improving image aesthetic and visibility. Limits of accurate camera acquisition (range and color) and the usable range of light for displays presented to human vision.

AI4media

ARTIFICIAL INTELLIGENCE FOR THE MEDIA AND SOCIETY

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 951911

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