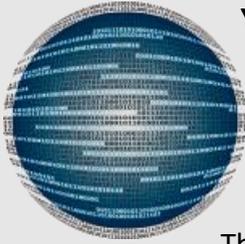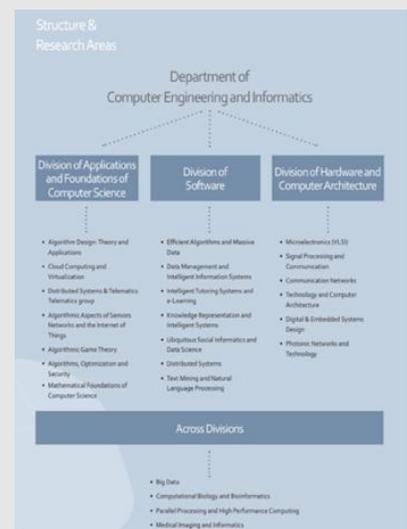YOUNG AT 40: The Computer Engineering & Informatics Department (CEID) of the Engineering School of the University of Patras was founded in 1979, its first class enrolling in 1980 and graduating in 1985.

The department's mission is to provide education and research in the broad field of Computer Science and Engineering (CS&E), Communications and Informatics. The founding of CEID marks the acceptance, in Greece, of Computer Science and Engineering as an independent field of study and was followed, in 1984 by the establishment of the Computer Science Department at the University of Crete. Today, computing is pervasive and its themes, either in the headlines (e.g. Artificial Intelligence, Machine Learning, Internet of Things, Data Science, Cloud Computing, Blockchain, Quantum Computing, Bioinformatics, Robotics) or foundational and hidden (e.g. computer architecture, networks and communication, algorithm engineering, computer vision, human computer interaction, software quality, edge computing, security, errors, faults and resilience of computer systems and algorithms, graph and matrix algorithms, algorithmic game theory, foundations of distributed computing, high performance scientific computing, …) develop at an extraordinary pace. The way to the future is paved with CS&E challenges and CEID has been engaged in research to advance the field and in forming young engineers and scientists in the field for almost 40 years.

ORGANIZATION: The Department is organized into 3 Divisions (Hardware and Architecture, Software, Foundations and Applications) that span the fields of CS&E and Communications. The Department also has several research laboratories as well as a Computer Centre that services the entire Department. Currently, the Department staff consists of more than 30 faculty and teaching and laboratory personnel. There are also several additional visiting and adjunct faculty and postdoctoral teaching fellows as well as technical, administrative and clerical personnel. The Department is governed by its Assembly, the Chair, the vice-Chair and a Governing Council.

PROGRAMS OF STUDY: The Diploma degree offered by CEID is accredited as an Integrated Master's by the Greek Ministry of Education and Religious Affairs. CEID graduates obtain the pertinent professional license of Electronics Engineer from the Technical Chamber of Greece as well as the relevant professional rights according to the legislation in force. The 5-year program of study of the Department seeks to provide the scientific and engineering background so that graduates can participate and

contribute in the study, design, development, theoretical analysis and building of software and hardware systems as well as in the study, research and development of theoretical approaches and designs that concern the principles of communication, computation, coordination, evaluation as well as the design and applications of computational objects and artifacts. The Department also hosts the following interdisciplinary graduate programs (typically 1.5 years long): 1) "Data Driven Computing and Decision Making", 2) "Integrated Hardware and Software Systems", 3) "Information Processing Systems and Machine Intelligence". CEID also participates in several multidisciplinary programs hosted by other Departments of the University of Patras (including Biology, Electrical and Computer Engineering, Medicine, Mathematics, Mechanical and Aerospace Engineering, Philology).

Study Guide

CURRICULA: Since the graduation of its first class in 1985, there have been revolutionary changes in most if not all human endavours because of extraordinary developments in ICT. An ever increasing number of companies are essentially digital platforms based on a complex combination and architecture of hardware, software, communication and coordination mechanisms and tools. CEID aims to prepare engineers with the appropriate breadth and depth of knowledge to tackle challenging problems while also acquiring the necessary soft skills to handle the accompanying social aspects thereof. Students entering as undergraduates pursue 5 years of study (10 semesters) leading to an Integrated MS degree in Computer Engineering & Informatics. Students have to pass successfully 53 compulsory and elective courses and defend a Diploma MS thesis, altogether corresponding to 300 ECTS units. The curriculum is regularly revised combining ACM/IEEE recommendations and experience and profiles of the faculty. The first 3 years consist almost entirely of compulsory courses covering core topics of all major areas of CS&E. Most courses teach (implicitly

or explicitly) the art of computational thinking. In the last 2 years students select courses from a large number of electives providing further depth in specialization and breadth of experience in the field. In the words of Peter Denning, "science, engineering and mathematics are interwoven in the web of computing". Therefore, many courses have an intensive laboratory component while several have a strong mathematical aspect. Students also have to pass a course on English technical terminology, one course in good practices for technical writing and presentations, and two courses in General Education
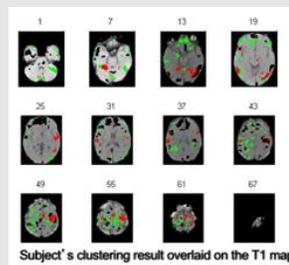
offered primarily by the School of Humanities and Social Sciences. One of the electives is a Practical Training course which is implemented as a semester long internship at selected companies and laboratories in the region and abroad. An essential component of the program is the Diploma thesis. This is an MS level project that each student has to undertake and prepare under the supervision of a faculty advisor and be defended in public. It is implemented as 6 course modules that are offered in the 5th year of study. Students also have the ability to pursue theses of an interdisciplinary nature, in collaboration with faculty and researchers from other Departments, Universities and Institutes in Greece or abroad. Students can also opt to spend a semester abroad under the Erasmus+ program. The program of study aims not only to have students understand the key topics, principles and theories of the field, incorporating state-of-the-art knowledge, but to also highlight the augmented responsibilities of CS&E professionals in the interconnected and digitized world of today and tomorrow in which hold the insightful words of Marshall McLuhan, that the tools that we build then they build us.

Some books published by CEID faculty

RESEARCH: The Department's research activities are described at length in the booklet Research@CEID. Members of the Department are highly active in research, advancing the field and publishing at competitive venues. Several are engaged in national and European R&D projects, in collaboration with partners in Greece and abroad. Since 2015, CEID faculty have attracted via the University Office of Research or CTI, research funding from national and European funding agencies exceeding 10 million euros, engaging and immersing graduate students in state-of-the-art research and development activities and helping launch their careers in academia as well as in R&D at companies as well as in startups. Members of the faculty regularly participate in program commitees of competitive international conferences and as editors of important scientific journals (e.g. IEEE Transactions on Signal Processing, Journal of Discrete Algorithms, SIAM J. Scientific Computing, Theoretical Computer Science, Computer Networks).

Subject's clustering result overlaid on the T1 map

OUTREACH AND OTHER ACTIVITIES: As the first CS&E Department in the country, CEID and its alumni played a notable role in the establishment and development of ICT in the private and public sectors in Greece, as well as in the education and training of the population, from secondary school and beyond. CEID faculty founded in 1985 what is today the Computer Technology Institute and Press "Diophantus" that provides IT infrastructure and services to the Greek Ministry of Education and Religious Affairs and all its educational units. Since 1985, all the directors of CTI were CEID faculty. CEID is a key player in the rapidly expanding ICT ecosystem of the region of Western Greece which contains hubs, entities and companies such as the Patras Science Park, PatrasInnoHub, Citrix, Intracom, Intrasoft, Knowledge, Meazon, Yodiwo and several startups, many of which participate at the yearly Patras Innovation Quest (Patras IQ). Hundreds of K-12 students and their instructors visit CEID each year in open days, special events and summer schools. The Department is also active at organizing events such as the CEID Seminar and Social Hour that are of interest to its members and not only. Over the years CEID has partially sponsored and organized international conferences, most recently ICALP'19 (Int'l. Conf. Automata, Languages and Programming), DCOSS'19 (Int'l Conf. Distributed Sensor Systems), IISA'19 (Int'l. Conf. Information, Intelligence, Systems and Applications),

SETN'18 (10th Hellenic Conference on Artificial Intelligence), ALGO'15, the 2015 Gene Golub SIAM Summer School, etc. CEID students run various groups and participate in events ranging from technical and scientific to artistic, athletic and social, while several are active in volunteering.

NEW BUILDING: Starting in 2019, CEID is moving to a new building occupying a 10,000 sq.m. area in the northeast side of the University campus, not too far from the University Library and the University Hospital. The building consists of a set of units comprising a large amphitheater, lecture and seminar rooms of various sizes, faculty and personnel offices, library, reading rooms, common rooms, cafeteria, etc. The new building is located next to the Computer Technology Institute and Press "Diophantus", thus further strengthening interactions between the two organizations.

ALUMNI: The Department has a body of over 5000 alumni who pursue successful careers all over the world. A significant percentage of CEID graduates have pursued PhDs and are currently employed at universities and research laboratories in Greece and abroad. CEID alumni have founded successful startups, work at government organizations, or are working in industry, contributing to the development of ICT. To mention just a few, in addition to practically all Greek universities: Google, IBM, Microsoft, Facebook, NASA, Booking, Citrix, EPFL, Purdue, Goldman Sachs, Yahoo, SUSTech Schenzhen, U. Penn, U. Toronto, Chalmers U., Sapienza U. Roma, Imperial College, Intrasoft, Intracom, European Commission, Central Supelec Paris, Yahoo, Bank of America, Ohio State, Liverpool, Purdue, US NSF, NYU Stern School Business, etc. Alumni meet in Patras during Homecomings during which they recount their experiences to current students and help them network. The many successes of CEID Alumni, some of which are reported in the press, demonstrate the value of the studies and experiences acquired at CEID.

E. Gallopoulos, CEID Chair, July 2020

CEID AT A GLANCE / FACT SHEET

Key dates: 1979: CEID established; 1980: first class admitted; 1985: first class graduated; 1983: first PhD; 2013: Departmental External Evaluation; 2017: first Doctor Honoris Causa; 2019: HQA accredited CEID Integrated MS degree. **Personnel:** 27 faculty (+2 under appointment), 6 laboratory & teaching staff (+1 under appointment), 11 technical, administrative and clerical. **Graduates:** 5000 graduates since 1985. **Degrees and Programs:** Integrated Masters (5yr, 300 ECTS); several interdisciplinary MS programs (1.5 yr, 90 ECTS) jointly with other University of Patras Departments. **Admission** (5-yr program): Based on students' preferences & Panhellenic examinations results. **Graduation requirements**: accomplishment of 53 courses (38 compulsory, 15 electives); written MS thesis examined at public oral defense. **Divisions:** Hardware and Architecture; Software; Applications and Foundations. **Laboratories:** 13 Research Laboratories. **Computer Center:** Large capacity, high performance systems ranging from large servers to GPUs. CEID is equipped with electronics laboratories, optical network laboratories, extensive IoT and HCI infrastructure, industrial strength EDA tools, IC emulators and high frequency logic analyzers, SOC development platforms, image processing equipment with specialized cameras, UAVs, software radio development cards, etc. **Funding:** Over 10 million Euros granted to CEID members since 2015 from national and EU agencies. **Rankings:** (2020) QS ranked 251-300 in Computer Science & Information Systems; THE World University ranked 501-600 in Computer Science.

40 Years CEID

The first Computer Engineering & Informatics Department in Greece

Teaching and Research spanning Computer Science and Engineering (CS&E) and Informatics: Hardware and Architecture, Software, Foundations and Applications, Communication: Data and Network Sciences, Cloud Computing, Artificial Intelligence, Machine Learning, Cybersecurity, Internet of Things, Sensor Networks, Embedded Systems, Web Science, Algorithm Engineering, High Performance Computing, Low Powered Systems, Computer Vision, Theoretical Computer Science, Scientific Computing, Data Structures, Databases, Program Semantics, Human-Computer Interaction, ...

Programs of Study: Five year curriculum leading to the *Integrated Master of Computer Engineering & Informatics* (38 compulsory courses, 15 out of over 60 electives, plus a written Diploma thesis), PhD program, several interdisciplinary MS programs.

Teaching: Faculty of 30, holding PhDs with teaching and research experience at universities and research centers worldwide (*MIT, Harvard, Carnegie Mellon, Illinois, Minnesota, Purdue, Rutgers, Temple, Tennessee, UC Santa Barbara, ETH Zurich, Genève, Karlsruhe, King's College, Liverpool, Rennes, Saarbrucken, INRIA, Max Planck Institute, NASA, Nokia-Bell Labs, ...*)

Alumni recognition by the market and sought worldwide: Alumni and PhDs staff universities, research centers and industry in Greece and all over the world (*Google, Facebook, IBM Yorktown, IBM Zurich, Microsoft, NASA, Booking, Citrix, European Commission, EPFL, Purdue, Goldman Sachs, Yahoo, SUSTech Schenzhen, Toronto, Chalmers, Imperial College, Central Supelec Paris, Yahoo, Bank of America, Accenture, IBM Greece, Ohio State, Liverpool, Purdue, US NSF, NYU Stern, NTUA, EKPA, AuTH, U Ioannina, TU Crete,...*) as well as many startups...

Research: Funded by national and european agencies pursuing innovation on state-of-the-art topics. Faculty research publications of high impact (h-index). Faculty membership on editorial boards of competitive journals. Organization of top scientific conferences (*ICALP, ALGO, ACM STOC, ACM SPAA, ACM STOC, IEEE IPDPS, SIAM G2S3, DCOSS, ACM ICS, IEEE DCOS, IEEE IISA, ...*)

Support of our students at all levels (graduates, undergraduates), alumni association, academic advisor starting from freshman year, Practical Training at companies and organizations in Greece and abroad, CEID Seminar & Social Hour, scientific student groups, Artware festival, music and athletic activieis, ...

Modern infrastructure and laboratories housed at new high quality building

Scan me

CEID

Computer Engineering & Informatics Department
www.ceid.upatras.gr
School of Engineering, University of Patras, Greece

UNIVERSITY OF PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ