CMU Portugal

Exploring new research frontiers in ICT towards a global innovation ecosystem
CMU Portugal at a glance

Overview

The Carnegie Mellon Portugal Program (CMU Portugal) is a platform for education, research and innovation that brings together Carnegie Mellon University (CMU) and several Portuguese universities, research institutions and companies.

This partnership was launched in 2006, and is split into three phases:

- **Phase I:** 2006 – 2012
- **Phase II:** 2012 – 2017
- **Phase III:** 2018 – 2023

Mission

The mission of the Carnegie Mellon Portugal Program is to place Portugal at the forefront of research and technological development in the area of ICT, by promoting an innovation ecosystem with a tight coupling between cutting-edge research, world-class graduate education, and highly innovative companies in the data-driven economy.
Program Directors

Rodrigo Rodrigues  
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José Fonseca de Moura  
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Sílvia Castro  
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Megan Flohr  
Associate Director at CMU  
mflohr@andrew.cmu.edu
Open Call for Scientific Directors

- Joana Mendonça
  Instituto Superior Técnico, Universidade de Lisboa

- Fernando Velez
  Instituto de Telecomunicações & Universidade da Beira Interior

- João Paulo Cunha
  Faculdade de Engenharia da Universidade do Porto

- Luís Filipe Antunes
  Faculdade de Ciências da Universidade do Porto

- Luís Caires
  Faculdade de Ciência e Tecnologia da Universidade Nova de Lisboa

- Paulo Marques
  CTO of Feedzai

- Rui Maranhão
  Instituto Superior Técnico, Universidade de Lisboa

- Susana Sargento
  Universidade de Aveiro
Industrial Affiliates

**February 2018:** Establishment of the protocol with 12 new industrial affiliates

**2019:** Two additional industrial affiliates joined for a total of 14 industrial affiliates
CMU Portugal Program - “Top Down” ICT Focus Areas

- Software Engineering
- Data Science and Engineering
- Autonomy and Robotics
- AI and Machine Learning
- Language Technologies
- Design and Engineering at large
3rd Phase Initiatives

Education

To open in 2019
- Dual Degree PhDs
- Visiting Students Program
- Visiting Faculty and Researchers Program

Planned to start late 2019/ early 2020
- Executive Programs

Research

Ongoing Projects
- Exploratory Research Projects (ERP) 2017
- ERIs
- Collaborative R&D Projects
  - ERPs 2019

Closed Calls
CMU Portugal

Education Initiatives
The educational offer of CMU Portugal Program comprises research based, professional and mobility programs.

**Educational Programs**

- **5 Year Dual Degree PhD Programs**
  - Dual-Degree PhDs between CMU and Portuguese Universities

- **Executive Programs**
  - Intensive short-duration educational programs in Data Science and User Experience for professionals in ICT

**Mobility Programs**

- **Visiting Students Program**
  - Mobility program for the master students to develop research at CMU up to 6 months

- **Visiting Faculty & Researchers Program**
  - Mobility program for faculty affiliated with Portuguese higher education institutions to spend up to 4 months at CMU to develop research
Dual-Degree PhD Programs

Objectives
Dual Degree PhD programs in selected cutting-edge areas of ICT
Graduates receive dual degrees conferred by Carnegie Mellon and affiliated Portuguese University

Research Topics
- Computer Science
- Electrical and Computer Engineering
- Engineering and Public Policy
- Language Technologies
- Robotics
- Software Engineering
- Human Computer Interaction (2020-2021)

Collaborative consortiums
Research in Portugal and at CMU
Co-advisors by Portuguese and CMU faculty

Format
3 years in Portugal + 2 years at CMU
Dual-Degree PhD Programs

Admitted students

124 admitted students since 2007

- 1st Phase (2007-2012): 98 admitted students
- 3rd Phase (2018-2023): Until 2019 - 5 students were admitted
Dual-Degree PhD Programs

2018-2019 students

**2018 Cohort**

Name: Alex Gaudio  
Ph.D. Program: ECE Ph.D.  
Affiliation: FEUP and CMU  
Supervisors: Aurélio Campilho (FEUP)  
Asim Smailagic (CMU)

**2019 Cohort**

Name: Luis Borges  
Ph.D. Program: ECE Ph.D.  
Affiliation: IST and CMU  
Supervisors: Bruno Martins (IST)  
Jamie Callan (CMU)

Name: Rudolph Sanatorromana  
Ph.D. Program: EPP Ph.D.  
Affiliation: IST and CMU  
Supervisors: Joana Mendonça (IST)  
Granger Morgan (CMU)

**2019 Cohort**

Name: Neil Mehta  
Ph.D. Program: ECE Ph.D.  
Affiliation: IST and CMU  
Supervisors: Patrícia Figueiredo (IST)  
Pulkit Grover (CMU)

Name: Maria Casimiro  
Ph.D. Program: SE Ph.D.  
Affiliation: IST and CMU  
Supervisors: Paolo Romano (IST)  
David Garlan (CMU)
Dual-Degree PhD Programs

Admitted students

- Ph.D. in Robotics
- Ph.D. in Computer Science
- Ph.D. in Software Engineering
- Ph.D. in Language Technologies
- Ph.D. in Electrical and Computer Engineering
- Ph.D. in Engineering and Public Policy

**Host Department at CMU**

- Computer Science Department: 40%
- Engineering and Public Policy: 26%
- Language Technologies Institute: 9%
- Public Policy & Management: 7%
- Social and Decision Sciences: 2%
- Electrical and Computer Engineering: 10%
- Institute for Software Research: 7%
- Mathematical Sciences: 2%
- Robotics Institute: 2%

**Host institution in Portugal**

- CLBSE: 57%
- UC: 17%
- IST: 7%
- FCUP: 5%
- FEUP: 7%
- FCUTUC: 2%
- FCTUNL: 2%
- UA: 2%
Dual-Degree PhD Programs

Admitted students

- Ph.D. in Robotics
- Ph.D. in Computer Science
- Ph.D. in Software Engineering
- Ph.D. in Language Technologies
- Ph.D. in Electrical and Computer Engineering
- Ph.D. in Engineering and Public Policy

**Nationality**
- 51% Africa
- 10% Asia and Middle East
- 21% North America
- 14% Portugal
- 1% Rest of Europe
- 3% South America

**Gender Distribution**
- 83% Female
- 17% Male
Dual-Degree PhD Programs

Alumni

- **57%** of the alumni have graduated from IST;
- **16%** from FEUP and
- **10%** from CLSBE

- **38%** have graduated in ECE,
- **22%** in EPP and
- **19%** in TCE
Dual-Degree PhD Programs

Alumni

- 46% are of Portuguese nationality;
- 22% are from Asia,
- 15% are from the rest of Europe, and
- 12% are from the U.S.

- 82% are male
Dual-Degree PhD Programs

Alumni

On average a CMU Portugal alumni takes 5.41 years to finish the Ph.D.

- 54% of the are working in the U.S,
- 38% in Europe
- 54% work in Industry, 39% in the academia and the remainder in the government or NGO

Ph.D. alumni by employment country and type

- USA 54%
- Rest Europe 16%
- I 20%
- G 10%
- PT 8%
- U 6%
- G East Asia 4%
- I 4%
- G 1%
- U 1%

I- Industry  G- Government  U- University  N- NGO

CMU

Facebook

Google

Intel Labs

Feedzai

Princeton University

IBM

Huawei

University of California

Unbabel
Dual-Degree PhD Programs

Alumni Success cases

André Martins, Head of Research at Unbabel
PhD: André was the first dual degree student to finish a Ph.D. in Language Technologies (LTI)
Affiliation: IST/CMU
Graduation year: 2012

Filipa Reis, Invited Assistant Professor at Católica-Lisbon School of Business and Economics
PhD: Technological Change and Entrepreneurship
Affiliation: Católica
Graduation year: 2018

Miguel Araújo, Manager of Data Science at Feedzai
PhD: Computer Science
Affiliation: FCUP
Graduation year: 2017

Hugo Gonçalves, Analog Design Engineer at Synopsys
PhD: Electrical and Computer Engineering
Affiliation: FEUP/CMU
Graduation year: 2015

Susana Brandão, Data Scientist at NOS
PhD: Electrical and Computer Engineering
Affiliation: IST/CMU
Graduation year: 2015

Leid Zejnilovic, Assistant Professor at NOVA Business School
PhD: Technological Change and Entrepreneurship
Affiliation: Católica
Graduation year: 2014
Dual-Degree PhD Programs

Alumni Testimonies (recently graduated)

Working in Portugal

“Above all, it’s a privilege to be part of the CMU Portugal Program. The experience of pursuing your PhD in two different institutions, surrounded by two very distinct social and cultural surroundings was incredible.”

Rui Correia
Lead Machine Learning Engineer at DefinedCrowd

PhD: Language Technologies
Affiliation: IST/CMU
Graduation year: 2018

“My PhD experience was very enriching, I had the chance of meeting and collaborating with other students and great researchers at CMU. It was very motivating and inspiring to be a part of my research lab, and the campus provides a very intense and thriving student life.”

Zita Marinho
Researcher at Priberam Labs

PhD: Computer Science/Robotics
Affiliation: IST/CMU
Graduation year: 2018

Working Worldwide

“My experience working at Professor Yu’s is being absolutely fantastic! He is really inspiring, both professionally and personally. The lab does leading work in systems neuroscience and is composed of very talented people, who are great to work with every day.”

João Semedo
Postdoctoral Research Associate at Professor Yu’s Lab (CMU)

PhD: Electrical and Computer Engineering
Affiliation: IST/CMU
Graduation year: 2018
Dual-Degree PhD Programs

2020-2021 Call

12 PhD scholarships

Call will open on September 16th through December 31st, 2019

Research Topics
- Computer Science
- Electrical and Computer Engineering
- Engineering and Public Policy
- Language Technologies
- Robotics
- Software Engineering
- Human Computer Interaction
Executive Programs

Objectives
Educating and qualifying active agents, aspirants or well established professionals, as well as researchers and academics to address the growing challenges resulting from the integration of technologies into different domains of our society.

Research Topics
- User Experience Design (UxD)
- Machine Learning and Data Science
- Software Engineering (planning phase)

Collaborative consortia
Universities in Portugal
CMU
Industry partners

Formats
10 short intensive modules
Executive Program in Data Science and Machine Learning

- Aims to qualify both well-established professionals and graduates from related fields in data science and machine learning and, more broadly, in the constantly evolving field of artificial intelligence.

- 288 hours of lectures, which corresponds to 18 ECTS

- Candidates should have a master's degree or a pre-Bologna undergraduate degree in an area that is related to Computer Science and Artificial Intelligence, including but not limited to Electrical Engineering, Mechanical Engineering, or Mathematics.
Executive Program in User Experience Design

• Aims at educating and qualifying active agents, aspirants or well-established professionals, as well as researchers and academics in the area of human-computer interaction, in an interdisciplinary, structured and stimulant learning environment.

• 288 hours of lectures, which corresponds to 18 ECTS

• The candidates should have a pre-Bologna degree (Licenciado) or master's degree in one of the main areas of the Executive Program: Informatics or Computer Science, Design and Psychology or similar areas (Sociology, Anthropology, Multimedia, Communication Science, Electrical and Computer Engineering or Telecommunications, Mechanical Engineering, Industrial Management).
Visiting Faculty & Researchers

Portuguese Faculty at CMU University

**Objectives**
Immersion period of Portuguese faculty at Carnegie Mellon University to experience its culture and best practices in the field of research, education and innovation.

**Funding**
Number: 10 scholarships (€2 267.23/month)
Duration: up to 4 months

- **2019 call:** 10 Faculty admitted
- **2020 call:** to open in 2019 for visits from March 2020 to December 2020

CMU Faculty at Portuguese Universities

A similar program is planned to be implemented for CMU Faculty members to be in residence at Portuguese Universities.
Visiting Faculty & Researchers

- **79** faculty have participated in the Visiting Faculty Program since 2007.
- **20%** are affiliated with UL, **18%** with UP, **18%** with UC.
- The average length of the visits is **3 months**.
Visiting Faculty & Researchers

- **26%** of the visiting faculty are hosted in the Institute for Software Research, **21%** in the HCI institute, and **21%** in the ECE Department.

- The average number of **visits per year** is **6**.
### Visiting Faculty & Researchers

#### 2019 visiting faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>CMU host</th>
<th>CMU Department</th>
<th>Duration of stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vasco Manquinho</td>
<td>Instituto Superior Técnico, U. Lisboa</td>
<td>Ruben Martins</td>
<td>Computer Science Department</td>
<td>3</td>
</tr>
<tr>
<td>Bruno Leitão</td>
<td>University of Coimbra, Instituto de Ciências Nucleares Aplicadas à Saúde</td>
<td>Marcel Just</td>
<td>Department of Psychology, Center for Cognitive Brain Imaging</td>
<td>4</td>
</tr>
<tr>
<td>Andreia Mordido</td>
<td>Faculdade de Ciências, Universidade de Lisboa</td>
<td>Frank Pfenning</td>
<td>Computer Science Department</td>
<td>2</td>
</tr>
<tr>
<td>Pedro Moura</td>
<td>University of Coimbra - Dep. of Electrical and Computer Engineering</td>
<td>Javad Mohammadi</td>
<td>Department of Electrical and Computer Engineering</td>
<td>4</td>
</tr>
<tr>
<td>Thomas Durieux</td>
<td>Inesc-ID</td>
<td>Claire Le Goues</td>
<td>Institute for Software Research</td>
<td>4</td>
</tr>
<tr>
<td>Bongkeum Jeong</td>
<td>ITI of LARSyS</td>
<td>Jason Hong</td>
<td>Human-Computer Interaction Institute (School of Computer Science)</td>
<td>4</td>
</tr>
<tr>
<td>Vania Silverio</td>
<td>INESC-Microsystems and Nanotechnologies</td>
<td>Professor Carmel Majidi</td>
<td>Mechanical Engineering Department (Soft Machines Lab: SML)</td>
<td>3</td>
</tr>
<tr>
<td>Paulo Dias</td>
<td>University of Aveiro, Department of Electronics, Telecommunications and Informatics</td>
<td>Daniel Siewiorek and Asim Smailagic</td>
<td>Human-Computer Interaction Institute</td>
<td>3</td>
</tr>
<tr>
<td>Élvio Gouveia</td>
<td>University of Madeira and Department of Physical Education and Sport</td>
<td>Daniel P. Siewiorek</td>
<td>Human-Computer Interaction Institute</td>
<td>2</td>
</tr>
<tr>
<td>Petia Georgieva</td>
<td>University of Aveiro, Department of Electronics Telecommunications and Informatics</td>
<td>Pei Zhang</td>
<td>Department of Electrical and Computer Engineering</td>
<td>4</td>
</tr>
</tbody>
</table>
Visiting Students

Objectives
Extend research opportunities to MSc and PhD students of Portuguese University to participate in research projects and be supervised by researchers at Carnegie Mellon University. This program aims to encourage and prepare graduate students to pursue research careers within the scientific areas of the dual degree doctoral programs offered by CMU Portugal.

Funding
Number: 6 scholarships (€ 1362.37/month)
Duration: up to 6 months

2019 Call for Expressions of Interest September 16th
2020 Call to open in 2019 for up to 8 mobility scholarships
Visiting Students

- 40 students have participated since 2014 in the 4 editions of the Program
- 43% are affiliated with IST, 27% with FEUP
- 36% are hosted in the Computer Science Department, 31% in the ECE Department
Visiting Students

- The average number of **visits per year** is **10**
- The average **length of the visits** is **3 months**
## Research projects

### 1st Phase

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects funded</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 Call for Projects</td>
<td>10</td>
<td>Concluded in 2012-2013</td>
</tr>
<tr>
<td>2009 Call for Projects</td>
<td>15</td>
<td>Concluded in 2013-2014</td>
</tr>
<tr>
<td>2009 Joint Call for Projects with UT Austin</td>
<td>3</td>
<td>Partnership with UT Austin Portugal in Applied Mathematics, Concluded in 2012-2013</td>
</tr>
</tbody>
</table>

### 2nd Phase

<table>
<thead>
<tr>
<th>Year</th>
<th>Projects funded</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 and 2014 Entrepreneurial Research Initiatives</td>
<td>12</td>
<td>Integrated activities in research, innovation, advanced education, with industry collaboration, for real world impact, approximately 9M€ for Portuguese institutions, 4 years</td>
</tr>
<tr>
<td>2013 Early Bird Projects</td>
<td>10</td>
<td>Projects funded, Jumpstart new high-impact initiatives, emphasis on exploratory research, approximately 300k€, 1 year, two EBPs continued into ERIs in the second call</td>
</tr>
<tr>
<td>2017 Call for Exploratory Research Projects</td>
<td>8</td>
<td>Projects approved, Identify emerging key strategic areas for a potential third phase, approximately 700k€ for Portuguese Institutions, 1 year</td>
</tr>
</tbody>
</table>
## Entrepreneurial Research Initiatives (ERIs)

### 2013 & 2014 call

<table>
<thead>
<tr>
<th>Call</th>
<th>Name</th>
<th>Status</th>
<th>Closing date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERIs 2013</td>
<td>AHA: Augmented Human Assistance</td>
<td>Closed</td>
<td>31/12/2018</td>
</tr>
<tr>
<td>ERIs 2013</td>
<td>HYRAX: Crowdsourcing Mobile Devices to Develop Edge Clouds</td>
<td>Closed</td>
<td>31/07/2018</td>
</tr>
<tr>
<td>ERIs 2013</td>
<td>E4VALUE: Innovation Dynamics in Aeronautics and Embraer in Évora – Towards a Distributed Platform for Entrepreneurial Initiatives, New Employment and Skills Development</td>
<td>Closed</td>
<td>30/11/2018</td>
</tr>
<tr>
<td>ERIs 2013</td>
<td>INSIDE: Intelligent Networked robot Systems for Symbiotic Interaction with Children with Impaired Development</td>
<td>Closed</td>
<td>31/12/2018</td>
</tr>
<tr>
<td>ERIs 2013</td>
<td>TEIPL: Technology, Entrepreneurship and Innovation Policy Lab</td>
<td>Closed</td>
<td>30/11/2018</td>
</tr>
<tr>
<td>ERIs 2013</td>
<td>VR2MARKET: Towards a Mobile Wearable Health Surveillance Product for First Response and other Hazardous Professions</td>
<td>Closed</td>
<td>30/06/2019</td>
</tr>
</tbody>
</table>

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**Total funding for Portuguese Institutions**

€ 2 989 714,00

**Total Commitment from Industry**

€ 1 165 000,00
### Entrepreneurial Research Initiatives (ERIs)
#### 2013 & 2014 call

<table>
<thead>
<tr>
<th>Call</th>
<th>Name</th>
<th>Status</th>
<th>Closing date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERIS 2014</td>
<td>S2MovingCity: Sensing and Serving a Moving City</td>
<td>Open</td>
<td>29/02/2020</td>
</tr>
<tr>
<td>ERIS 2014</td>
<td>STRETCHTRONICS: Soft and Stretchable Mechatronics for Wearable Devices: Fabrication, Implementation and Applications</td>
<td>Open</td>
<td>12/01/2020</td>
</tr>
<tr>
<td>ERIS 2014</td>
<td>+ATLANTIC: Science and Technology Policy and Innovation Analysis to Maximize the Economic, Environmental and Social Benefits of Deep Sea Exploration and Oil and Gas Development in the South Atlantic Region</td>
<td>Open</td>
<td>31/01/2020</td>
</tr>
<tr>
<td>ERIS 2014</td>
<td>GoLocal: From monitoring global data streams to context-aware recommendations</td>
<td>Open</td>
<td>29/02/2020</td>
</tr>
<tr>
<td>ERIS 2014</td>
<td>SCREEN-DR: Image Analysis and Machine Learning Platform for Innovation in Diabetic Retinopathy Screening</td>
<td>Open</td>
<td>31/03/2020</td>
</tr>
</tbody>
</table>

**Total funding for Portuguese Institutions**: €2,593,549.00

**Total Commitment from Industry**: €1,406,480.00
Entrepreneurial Research Initiatives (ERIs)

2013 & 2014 call

Teams

- **23** Industry Representatives
- **101** PIs + Co-PIs
- **313** Researchers
  - **17** Dual Degree PhDs
  - **141** funded by the projects

- **18** Post Docs
- **30** PhDs
- **45** MSc
- **49** other Researchers
Entrepreneurial Research Initiatives (ERIs)

2013 & 2014 call

Scientific outputs

- **33** PhD Thesis
- **137** Master Thesis
- **7** Patents
- **77** Prototypes
- **42** Honors and awards
- **Publications**
  - **155** Peer review articles in Journals
  - **299** Presentations
  - **271** Peer review Conference papers
  - **25** Non-peer review papers
  - **19** Books and chapter of books
Entrepreneurial Research Initiatives (ERIs)

Success Stories

INSIDE (ERI 2013)

Deployment of a robotic “therapy assistant” that was tested in actual therapy sessions with children with Autism Spectrum Disorders in Hospital Garcia de Orta.

- +50 peer review articles
- +30 presentations
- +40 peer review conference papers
- Featured in several Portuguese media

Project Partners:
Entrepreneurial Research Initiatives (ERIs)

Success Stories

VR2 MARKET ERI (ERI 2013)

Development of technologies for first responder professionals in critical emergency scenarios including wearable sensors and an IoT based platform for monitoring the exposure to dangerous levels of different agents and peaks of physiological stress of first responders’ teams.

Launch of a new spin-off company known as WeSENSS, aiming at developing new wearable devices applied to several types of professionals and scenarios.

- 3 patents submitted
- 7 PhD thesis
- 25 master thesis
- +20 peer review papers

Project Partners:

[Logos of INESC TEC, U.Porto, and Universidade de Aveiro]

Carnegie Mellon University

bio devices
Entrepreneurial Research Initiatives (ERIs)

Success Stories

STRENGTHTONICS (ERI 2014)

This ERI developed a simple, low cost, rapid and efficient method to produce stretchable, flexible and easy to apply electronic tattoos using an inkjet printer. These ultrathin electronic e-skins have broad applications ranging from health monitoring to touch control panels in cars.

- 3 Prototypes (2 printers and a Bionic hand)
- 1 Patent (Submitted)
- 14 peer review papers
- 13 MSc dissertations
- 29 articles in Portuguese Media

Project Partners:

Carnegie Mellon University
Entrepreneurial Research Initiatives (ERIs)

2013 & 2014 call

Project Review 2019

5 final evaluations
7 mid-term evaluations

Panel Members

- Alex Rogers (AR), University of Oxford
- Giulio Sandini (GS), Istituto Italiano di Tecnologia
- Manuel Gomez Rodriguez (MGR), Max Planck Institute for Software Systems
- Marina van Geenhuizen (MvG), Delft University of Technology
- Sergey Gorinsky (SG), IMDEA Networks Institute

The final reports of the projects AHA, Hyrax, E4value, INSIDE and TEIPL were all accepted by the evaluators.
## Exploratory Research Projects (ERPs) 2017

<table>
<thead>
<tr>
<th>Name</th>
<th>Area</th>
<th>Status</th>
<th>Closing date</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeepData – Data Science in the Azores Deep Sea</td>
<td>AIR Center</td>
<td>Closed</td>
<td>31/08/2019</td>
</tr>
<tr>
<td>THz communication for Beyond 5G Ultra-fast Networks</td>
<td>Electrical and Computer Engineering</td>
<td>Closed</td>
<td>31/08/2019</td>
</tr>
<tr>
<td>Privacy Preserving Middleware Platform for IoT</td>
<td>Computer Science</td>
<td>Closed</td>
<td>31/08/2019</td>
</tr>
<tr>
<td>Conquest – Carrier AggregatiON between Licensed Exclusive and Licensed Shared Access FreQUEncy BandS in HeTerogeneous Networks with Small Cells</td>
<td>Electrical and Computer Engineering</td>
<td>Open</td>
<td>31/12/2019</td>
</tr>
<tr>
<td>DoubleChain – Supporting ubiquitous and fully decentralized supply chain operations through blockchain technology</td>
<td>Technology, Management and Policy</td>
<td>Open</td>
<td>29/02/2020</td>
</tr>
<tr>
<td>FeedBot – A symbiotic autonomous robot for meal assistance to motion-impaired people</td>
<td>Electrical and Computer Engineering</td>
<td>Open</td>
<td>31/12/2019</td>
</tr>
<tr>
<td>eCSAAP – Expert Crowdsourcing for Semantic Annotation of Atmospheric Phenomena</td>
<td>Computer Science</td>
<td>Open</td>
<td>29/02/2020</td>
</tr>
</tbody>
</table>

**Total funding for Portuguese Institutions**

€ 700,000.00
Exploratory Research Projects (ERPs) 2017

Success Stories

FEEDBOT

This ERP has already developed a **prototype of a robotic arm** capable of feeding people with disabilities, as tasked by a vision system. FeedBot will have a great **impact in the quality of life of people with a wide range of motion-related disorders**, such as Parkinson’s disease, cerebral palsy, or stroke.

The project prototype was exhibited at the CMU Portugal stand at Ciência 2019 Conference and was a success.

Although this is a really recent project, it has already been disclosed in Portuguese media.
2019 calls
Large-scale collaborative research projects

Objectives
• Alignment with the national and regional strategies
• Foster industry-science relationships
• Strengthen competitiveness and international integration

Total Funding:
5 M€ (PT) + 3M€ (CMU)
• 3-4 projects
• Maximum duration of up 36 months

Research Topics
• Information and Communication Technologies
• Data science and Engineering
• Artificial Intelligence and Machine Learning
• Autonomy and Mobility
• Design in a varsity of societal settings and applications

Collaborative consortiums
• Leadership by Portuguese company
• At least two R&D centres in Portugal
• At least one CMU research team

2019 Call closed on June 19th
17 Applications submitted
2019 calls
Large-scale collaborative research projects

Submitted projects can be grouped in 6 areas:
- Networks
- HCI, NLP, Analytics
- Energy & Public Policy
- Wearables & Health
- SE, ML, PL
- AI & Robotics

17 projects submitted by Portuguese companies with the participation of 17 academic partners; 8 other Portuguese companies; 8 CMU departments
2019 calls
Large-scale collaborative research projects

Call deadline (Jun.)
Evaluation (Nov.)
Announcement of results (Dec.)

2019

Y1
Signing of Contracts

2020

Y2
Midterm Project Reviews

2021

2022

Y3
Final Project Review
Exploratory Research Projects (ERP) 2019

**Deadline**
- July 30th 2019

**Total Funding:**
- 400 K€ for Portuguese teams
- + matching funds for CMU Team
  - Up to 8 projects
  - Up to 12 months

**Objectives**
- Bootstrap high-impact potential research activities
- High-risk/high-reward
- Significant future expansion

**Research Topics**
- ICT with a focus on the opportunities provided by the data economy as a driver of growth and change.

**Collaborative consortia**
- At least one R&D centre in Portugal
- At least one CMU research team
- Industry partners are not mandatory but it is beneficial
Exploratory Research Projects (ERP) 2019

Submitted projects can be grouped in the following areas:

- Robotics (5)
- ML/AI & ML/AI/Life Sciences (10)
- System Security (4)
- PL/Verification (4)
- NLP/IR (4)
- Networks (2)
- Design Thinking (2)
- Others: Antennas, EPP, Quantum, VR, Smart Buildings (1)

39 projects submitted by 17 Portuguese institutions with the participation and with the participation of CMU faculty from 9 CMU departments.
Exploratory Research Projects (ERP) 2019

- Call deadline (July)
- Evaluation (Nov.)
- Announcement of results (Dec.)
- Final Report

2019

2020

2021

Y1
Signing of Contracts
Future Call for Research Projects

So far:
- 2019 Large-scale collaborative research projects (5M€) (expected funding 3-4)
- 2019 Exploratory Projects 400k€ (expected funding 5-8)

CMU Amendment nr. 8 to Research and Education Collaboration Agreement (2018-2023)

Medium size projects: 15-20 Projects (660k/ project) for an estimated total of 10-12M€ (5-7M € remaining)
Small size projects: 15 and 20 projects (200K/project) for an estimated total of 3-4M€ (2,6-3,6 M€ remaining)
Innovation and Collaboration with Industry
CMU Portugal has been building a strong innovation ecosystem through a close link between academic institutions, Portuguese industry, and Carnegie Mellon University. Over 130 companies have been actively engaged with the initiatives of the Program and have fostered the creation of over 10 knowledge-based startups.

- 130+ Industry Partners
- 16 teams enrolled in the Entrepreneurship in Residence Program
- 11 Startups created by students, alumni, postdocs, and/or faculty members
- Over $150M of international investment secured by startups
- 800+ skilled jobs created by startups
CMU Portugal startups companies are already references in their sectors

Feedzai company focused on fraud prevention in electronic payments, was listed for the second consecutive year on the Tech Tour list, which highlights the 50 companies with the highest growth potential in Europe.

The startup has raised since 2011 more than $82M.

Veniam connects vehicles to each other and to the internet using vehicular mesh networking technologies. Veniam has raised more than $30M in venture capital is backed by top VCs as well as Verizon, Cisco, Liberty Global, Yamaha Motors and Orange and already operates mesh networks of connected vehicles in New York, Singapore and Porto.

Dognaedis focused in three major activity Security Audit and Consultancy, Software Assurance and Business Continuity Support was acquired by Prosegur in 2016 for $1.5M.

Portuguese Translation company that combines neural Machine Translation with professional human editing to deliver high quality translation at massive scale, raised a total funding of more than $31.2M and will soon open a new office in Pittsburgh dedicated to AI, adding to the two others in New York and San Francisco.
CMU Portugal

Outreach, Events & Media Initiatives
Within the scope of **Communications activities**, the CMU Portugal Coordination Office oversees a very wide spectrum of actions as listed below:

I. Internal Communication Activities  
II. Media Related Activities  
III. CMU Portugal events (promoter and supporter)  
IV. Outreach & Networking activities

The **key communication objectives** for the CMU Portugal Program in 2018-19 include:

- Enhancing the Program's visibility, particularly in online platforms;  
- Positioning and strengthening the Program's new initiatives and activities.  
- Promoting the key stakeholders and representatives of the Program;  
- Building a strong communication network with all our stakeholders to share initiatives and increase our outreach.
Media Activities

I. Internal Communication Activities

a) New Image & New Website

To support the entrance into a new phase, the CMU Portugal Program renewed its image and created a brand-new logo and website.

The new image reflects the strategy and vision behind the 3rd phase of the program and consists of:

- New logotype and image
- New website: http://www.cmuportugal.org/
- New communication materials: roll ups, notebooks, pins, greeting cards, folders, pens, bags, letter paper, and more
Media Activities

b) Web based platforms

Website: with regular updates of new CMU Portugal content, including:

- **News articles**: with all the information about our latest activities and initiatives;

- **Inside Stories**: monthly features with interviews and articles with members of our community (industry partners, students and faculty) but also articles to follow up relevant achievements

- **Events**: disclosure of all events related to the Program (Portugal and Pittsburgh).
Media Activities

**Social Media platforms:** daily updates and shares in our web platforms, namely Facebook, Twitter, LinkedIn and Youtube about:

- CMU Portugal initiatives (activities, events & CMU Portugal publications),
- News and trends on ICT or other relevant topics
- General information that might be of relevance to our audience.

**Newsletter:** Launch of a new bi-monthly online newsletter named "News from the Fence" to promote all our initiatives, including news, events and CMU Portugal papers, distributed through electronic mail, shared on our social media networks and available our website.

**Direct-targeted mailing campaigns:** E-mail messages for specific audiences are used for announcements, invitations to events, recruitment for graduate programs, and other important information in between newsletters. Myemma online mailing platform is used for this end.
Media Activities

II. Media Related Activities

Within this scope, a broad range of communication activities addressed to the Media are aligned with the strategic objective of communicating and promoting the CMU research portfolio and Education achievements, namely:

a) Press releases disclosure;

b) One-to-one negotiations: to establish and build solid relationships with some strategic media to promote interviews, opinion articles and other media news;

c) Media and social media reports (Clipping): to monitor and keep track of the news disclosed in Portuguese Media that have a reference to the CMU Portugal Program.
Media Activities

a) Press releases disclosure:

Since February 2018, the CMU Portugal Program launched a total number of 10 Press Releases to the Portuguese Media.

Until 2018 the Program maintained a key collaboration with LPM, a Public Relations agency that used to prepare and distribute our Press Releases to the media and established all contacts with the media. When entering the 3rd phase, this collaboration has come to an end and currently this work is done internally by the Portuguese Coordination Office.

Press Releases released to Portuguese Media during this period:

- 08.2018. Results of the 2017 Call for Exploratory Research Projects
- 09.2018. CMU Portugal has two new National Directors for the 3rd phase
- 10.2018. A Call is open for the 2019/2020 Dual Degree Phds
- 10.2018. Electronic Tattoos project being developed by Universidade de Coimbra and CMU
- 11.2018. CMU Portugal has a new Image and website
- 02.2019. Portuguese Minister for Science and Technology visits CMU
- 03.2019. A Call is open for Large Scale R&D Projects
- 07.2019. A Call is open for Exploratory Research Projects
- 07.2019. VR2 Market ERI organizes its Closing Session
- 08.2019. CMU Portugal takes Researchers to Pittsburgh under the Visiting Faculty & Researchers Program
Media Activities

b) One-to-one negotiations:

In addition to the Press Releases and when there are relevant topics to approach related to the CMU Portugal Program we establish strategic contacts with the media to promote interviews, opinion articles or other media news.

Since February 2018, we managed to proactively promote a set of 8 interviews and news articles by reaching out directly to some targeted Media to ensure the coverage of some of our latest initiatives in more detail.
Media Activities

b) One-to-one negotiations:

Video Coverage of the electronic tattoos being developed at University of Coimbra and CMU under the ERI Project Stretchtonics

Date: 31/12/2018
Media: Reuters

11 pages Article on robots in Portugal featuring Vizzy and ASTRO from our Inside and AHA projects and included interviews with both project PIs

Date: 25/11/2018
Media: Diário de Notícias
Media Activities

**Media and social media reports (Clipping)**

Summary of our presence in the Media
(January 2018 - August 2019)

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**In our online Platforms**

**Website:**
- 49 CMU Portugal News on the new website
- 19 events shared on the website
- 60 CMU Portugal Papers shared
- 4 Newsletters “News from the Fence”

**Social Media:**
- 438 Facebook posts & 631 Page Followers
- 720 Tweets & 1191 Followers
- 106 Linkedin posts (August 2018-August 2019)

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**In Traditional Media**

- 114 articles published in the Portuguese media
- 102 online
- 10 Printed articles
- 1 Video coverage by Reuters
- 1 in TV
Events

III. CMU Portugal events (as promoter and supporter)

February 15th & 16th 2018 - Renewal of the International Partnerships

Day 1 - Official Ceremony
The CMU Portugal Program was part of the organization of the official Ceremony to renew the International partnerships, held by the Ministry of Science and Technology on February 15th at Ceiiia, Porto.

Day 2 - Technical Workshops
The signing ceremony was followed by a series of technical workshops open to the scientific community. The event hosted more than 140 participants, distributed by six workshops bringing together faculty from CMU and Portuguese universities, but also researchers and engineers from companies committed to participating in the third phase of the program.
Events

February 2019 - Visit to CMU with the Minister of Science, Technology and Higher Education and FCT President

On February 1st, **Minister Manuel Heitor** visited CMU along with a **delegation of 15 people** including: FCT President, Paulo Ferrão; CMU Portugal National Co-Director, Nuno Nunes; and representatives from Industry & faculty members of Portuguese universities and research centers to **strengthen cooperation in ICT** between the Portuguese Government and CMU.

March 2019 - Project SCREEN DR
Photo Exhibition

“Look and See. Sense and Live” and “Other Portraits and Self-portraits” is a photo and video exhibition developed under the CMU Portugal project **SCREEN DR**, led by Professor Aurélio Campilho from **INESC TEC's** Centre for Biomedical Engineering Research (**C-BER**) in collaboration with the Portuguese photographer Renato Roque.
Outreach Activities

IV. Outreach & Networking activities

Outreach activities are another key part of the Program’s communication strategy aimed at fostering public awareness (and understanding) of science and making informal contacts to disclose the Program’s initiatives and goals.

During this period, we participated in the three main Portuguese Science Conference in order to reach out to a broader audience and disclose the Program activities:

July 2018, Participation at Encontro Ciência 2018

On July 3rd the CMU Portugal Program hosted the session “Information and Communication Technologies: applications and challenges” at Ciência 2018, a major Science Conference organized by the Portuguese Government through the Ministry of Science Technology and Higher Education and FCT, which is held annually in Lisbon to highlight the main achievements in science and technology in Portugal.
Outreach Activities

December 2018, 2nd Conference of the Permanent Forum on Digital Competencies (INCoDe 2030)

The Carnegie Mellon Portugal Program was part of the INCoDe 2030 event with a exhibition stand during the Conference to promote the Program and its initiatives on December 12th at the Lisbon Congress Center (Centro de Congressos de Lisboa).

July 2019, Participation at Encontro Ciência 2019

The CMU Portugal Program participated once again at the Ciência 2019 Summit with three main initiatives:

- CMU Portugal Session entitled “CMU Portugal - Exploring New research Frontiers in ICT”
- CMU Portugal Stand with project demos
- Photo Exhibition of one of our ERI’s projects - SCREEN DR
ERPs & LS 2019 Projects' evaluation

Executive Programs:
User Experience Design
Data Science & Machine Learning

ERIs 2014 7 Final Project review

Executive Programs Summer School

Call for ERPs 2020

Carnegie Mellon Portugal