Involving students of CEEPUS partners in projects initiated by companies

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Thematic Workshop: Preparing for the labour market: internships, research partners and silent partners
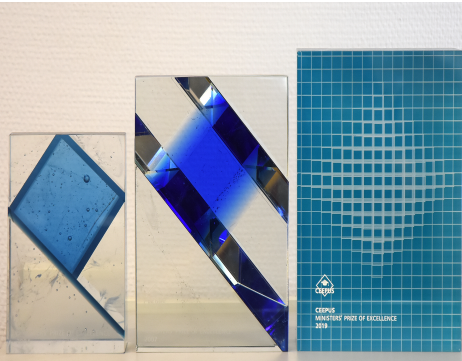International Conference of CEEPUS Partners - Strengthening Networks, Expanding Horizons

September 25, 2024, Budapest

Content

1. CEEPUS Network HU-0019

2. Triangle model

3. Project labs

HU-0019: International Cooperation in Computer Science

- Running since 1998.
- Minister's Prize of Excellence: 2004, 2007, 2019.

Internships: a triangle cooperation model among CEEPUS partners

- Students accepted based on bilateral agreement by the host university,
- Students registered for a course called "Cooperative education" (16 ECTS credits),
- Host university provides local supervision,
- Erasmus internship agreement between sending institution and the company,
- 77 students of CEEPUS partners received applying the triangle model (most of them from BBU to ELTE).

Joining industry-university project labs

- Third-generation research university model: education-research-innovation also in master's programmes;
- Industrial departments (ELTE-Bosch AI Department)
- Project labs – tools for integrating innovative projects into education and research;
- Student mobility through exchange programs (CEEPUS, Erasmus);
- Lab course (16 credits) + master thesis (30 credits);
- managing research and prototype software development at real scale;
- open innovation, business and exploitation opportunities, business plans and competitor analysis;
- national and EU tenders.

Selection of projects

- Careful selection of topics and tasks:
    - a real need, an unresolved issue, the creation of new knowledge;
    - requires PhD research;
    - a stable topic for at least 5 years;
    - internationally relevant, "state of the art" standards;
    - build competence at university;
    - free publication of scientific results;
    - a win-win-win (university-company-society) construct.
- 10–15 PhD/MSc students per project, mixed Hungarian and international PhD/MSc students, 2–3 lecturers;
- each member of the group can be given a task of the right level and size.

Analysis and refactoring of Erlang programs

The first project lab has been running continuously since 2006.
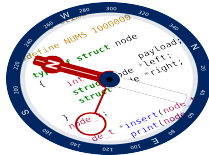
- ELTE-Ericsson Software Lab, supported by ELTE-Soft;
- 90% of internet traffic is carried by devices using Erlang.
- WhatsApp is also Erlang-based;
- International contacts (Kent, Sheffield, St Andrews, Erlang Solutions, Klarna), EU FP7 project;
- Publications, OTDK prizes, four successful PhD theses (130+ independent references);
- Outcome: free software for corporate use based on new R&D results - license replacement;
- Cyber security: code vulnerability - business exploitation;
- Green computing for software intensive services.

CEEPUS mobility: 3 students, 1 PhD student and 1 professor from Novi Sad, joint papers; and 1 student from Rijeka.

Code Checker - Code Compass
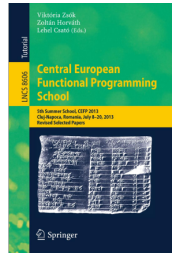

CodeChecker

https://codecompass.net

- Open source static analyzer for identifying bugs and code comprehension (C++);
- Used by Ericsson, Intel, Google, Apple, Mozilla, Cloudera, BMW, Elisa-tech group, Huawei and others;
- Mozilla: to check the Firefox code;
- Seven PhD students, 300+ independent references;

CEEPUS mobilty from Maribor: 1 professor and 4 PhD students.

Summer schools and conferences

- Conferences and Summer schools for sharing results of projects;
- Sponsorship and presentations by the industrial silent partners (Ericsson, Morgan Stanley);
- CEFP - Central European Functional Programming School: 6 editions, 6 Springer volumes, 250+ students, PhD students and professors from CEEPUS partners (from BBU Cluj, Plovdiv, Kosice, Linz, Selye Komarno, Nitra, Subotica Tech);
- SQAMIA - Workshop on Software Quality Analysis, Monitoring, Improvement, and Applications: 11 editions, 400+ students, PhD students and professors from CEEPUS partners (Maribor, Novi Sad, ELTE).

Entrepreneur education shared in EIT HEI project

- Innochange, a EIT HEI project involving ELTE, BBU Cluj and Plovdiv;
- Creativity, responsibility and entrepreneurship course: 160 students from 5 universities, and local implentations.

Double degree master program in EIT and DEP Digital Skills

- SPECTRO: EIT Digital coordinated Cybersecurity master with ELTE and BBU involved;
- Students joining to ELTE-OTP Kiberlab (OTP Bank established lab at ELTE);
- CYCERONE : DEP Cyber Skills Academy - EIT Digital coordinated, ELTE and BBU involved.

Conclusion

CEEPUS Network is the solid basis for

◆ CEEPUS

- exchanging and involving students, PhD students and professors to industry university cooperation;
- sharing of best practices on industry initiated projects and cooperative education, internships;
- for preparing and running joint projects and master programs involving industrial partners (EIT, DEP);
- creating and delivering joint courses on entrepreneurship.