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David M. Cerna

Established researcher specializing in symbolic artificial intelligence and formal logic. Through my current positions as a junior faculty member and project leader, as well as my previous positions as a postdoctoral researcher, I have demonstrated my excellent analytic, problem solving, collaborative, and mentorship skills.

Work Experience

09.2020-current **Scientist**, Czech Academy of Science, Institute of Computer Science (CAS ICS), Prague.

Junior faculty member at CAS ICS, equivalent to assistant professor. Responsibilities include basic research, project management, funding acquisition, mentoring students, and building research collaborations. (Computational Mathematics Group)

08.2020-current **Project Leader**, Research Institute for symbolic computation (RISC), Johannes Kepler University (JKU), Linz, Austria.

Project leader of the Math$_{LP}$ project, a basic research project funded by the Linz Institute of Technology (LIT). The project is an international collaboration with Josef Urban's group at the Czech Institute of Informatics, Robotics, and Cybernatics (CIIRC) located in Prague, Czechia. Responsibilities include project management, Postdoc superversion (Michal Buran), and basic research in the areas of symbolic AI and Machine Learning. Math$_{LP}$

09.2018-08.2020 **Senior Postdoc**, *Institute for Formal Methods and Verification (FMV), JKU.*

LOGTECHEDU was a basic research project funded by LIT focused on digitalization within university curriculum and the proliferation of formal logic education. I developed an educational app for Android devices (github.com/Ermine516/AXolotl, App Store Link) to introduce students to formal logic. Additionally I ran an empirical studies to evaluate the benefits of such technology for first-year university students. The project was lead by Prof. Armin Biere.

03.2017-08.2018 **Senior Postdoc**, *RISC, JKU.*

GALA was a basic research project funded by FWF focused on the development of generalization methods similar to those used in program synthesis task. Responsibilities included development of methods for high-order theories and implementation of existing methods in a library for generalization methods hosted by RISC (www3.risc.jku.at/projects/stout/library.html). The project was lead by Prof. Temur Kutsia

02.2015-03.2017 **Postdoc**, *RISC, JKU.*

LogicGuard II was a joint industry/academic project funded by FFG organized by RISC and SecureGuard GmbH. Responsibilities included the development, implementation, and analysis of a software package designed to verify whether provided data streams obey user specified formal conditions. The developed software may be found at http://www3.risc.jku.at/projects/LogicGuard2. The Project was lead by Prof. Wolfgang Schreiner.

09.2011-02.2015 **Predoc**, *Faculty of Informatics, Technical University of Vienna, Austria.*

My PhD studies, as a member of the Group for Theory and Languages, were funded by a scholarship from the Vienna PhD School of Informatics. My research focused on computational proof theory and automated theorem proving. Responsibilities also included development of the Gapt software library (github.com/gapt). Thesis Advisor: Alexander Leitsch.

Professional Milestones

Peer-Reviewed Academic Publications (21 in total)

Areas: Symbolic Artificial Intelligence, Theoretical Computer Science, Education Technology

Full Publication List: orcid.org/0000-0002-6352-603X

Exemplary publication:

- S. J. Purgał, **D. M. Cerna**, and C. Kaliszyk, *Learning Higher-Order Logic Programs From Failures*, International Joint Conference on Artificial Intelligence (IJCAI 2022)
- **D. M. Cerna**, *Anti-unification and the theory of semirings*, Journal of Theoretical Computer Science 848: 133-139 (2020)
- **D. M. Cerna** *et al.*, *Aiding an Introduction to Formal Reasoning Within a First-Year Logic Course for CS Majors Using a Mobile Self-Study App*, International Conference on Innovation and technology in Computer Science Education (ITICSE), 61-67 (2020)
- **D. M. Cerna** and Temur Kutsia, *A Generic Framework for Higher-Order Generalizations*, International Conference on Formal Structures for Computation and Deduction (FSCD), 10:1-10:19,(2019)

Successful Acquisition of Scientific Funding (567 Thousand Euros)

Bilateral International Project (Austria-Czechia), *Duration:* 36 months, *Project:* PANDAFOREST

Young Researcher Fellowship, *Duration:* 30 months, *Project:* MATH_{LP}

Travel Fellowship, *Visit:* 3 months, Computational Logic Group, University of Innsbruck

Participation in International Workshops, Conferences, and Organizations

Co-chair of the 36^{th} International Workshop on Unification Theory in Haifa, Israel

Including two invited talks, 28 contributed talks, and 10 program committee memberships.

Institute Representative, CLAIRE Research Network

Management Committee member, Representing Czechia, EUROPROOFNET Cost Action

Education

04.2015 **PhD in Computer Science**, *Technical University of Vienna.*
Computational Logic and Automated Reasoning, Supervisor: Alexander Leitsch

08.2010 **Master of Computer Science**, *Rensselaer Polytechnic Institute (RPI)*, Troy, New York,USA.
Network security and Cryptography, Supervisor: Bülent Yener

06.2010 **Bachelor of Computer Science**, *RPI*, Troy, New York,USA.

06.2010 **Bachelor of Mathematics**, *RPI*, Troy, New York,USA.

Technical Skills

Mentorship: *1 Postdoc, aided advising 3 PhD students and 2 masters students (unofficial).*

used/studied during career: *Java, Scala, C, C++, Prolog, F#, Coq, javascript, Standard ML, Python, Perl, Haskell, SQL, Fortran, Linux , Android, Android Studio, Latex, Pytorch.*

Spoken Languages: *English (Native), German (ÖIF B1, 2021)*

Hobbies

Sports: *Rock climbing, Biking, Hiking, Running.*

Recreation: *Chess, art-house cinema, sci-fi (books), philosophy, modern literature, bowling, billiards.*