Vienna Center for
Logic and Algorithms

Annual Report 2019/2020

Contents

About VCLA

Vienna Center for Logic and Algorithms

The Vienna Center for Logic and Algorithms (VCLA) is a globally unique competence center in the field of logic and algorithm research.

It was founded in September 2011 and officially opened in January 2012 in the presence of the rector of the Technische Universität Wien (TU Wien) Sabine Seidler and Turing Award laureate Edmund M. Clarke. The Center was founded by Stefan Szeider and Helmut Veith and led by both until Helmut Veith passed away in March 2016.

In December 2017, Agata Ciabattoni became the new elected co-chair, and the VCLA board structure changed.

The VCLA was funded by TU Wien in association with the FWF - Doctoral College Logical Methods in Computer Science (LogiCS).

The Center aims at promoting international scientific collaboration in logic and algorithms and communicating Austria's excellence in these two areas of computer science research, using a variety of channels.

These objectives are realized through various activities which include:

- The VCLA International Student Awards for Outstanding Theses
- The LogicLounge series
- The VCLA Workshop Series
- The VCLA series of winter and summer schools
- The VCLA Visitor Program
- Hosting talks by renowned international speakers
- Cooperations, and
- Educational outreach

Due to the restrictions of the COVID-19 pandemic a large number of events and talks in 2020 had to be postponed, cancelled or took place online.

www.vcla.at

In Memoriam

VCLA co-chair Helmut Veith (1971-2016) passed away in tragic circumstances on March 12, 2016.

Accompanying the rebirth of the Austrian logic scene his marking of the field, space, and time is further on augmented by the students who he mentored, and by his visionary activities of building bridges between the computer science expert and the layman.

Helmut studied Computational Logic at TU Wien, a studium irregulare with a curriculum he designed himself, together with Richard Zach. After appointments at TU Munich and TU Darmstadt, he returned to TU Wien for a full professorship in Computer Aided Verification.

Helmut's passion for logic led him to establish not only the Vienna Center for Logic and Algorithms with Stefan Szeider, but also to bring the largest logic conference in history to Austria - the Vienna Summer of Logic. Helmut served as the speaker of the Doctoral College Logical Methods in Computer Science and as the deputy coordinator of the National Research Network Rigorous Systems Engineering (RiSE).

Posthumously, Helmut was awarded the ERC Advanced Grant - one of the highest academic distinctions in Europe - for his project HYDRA (Harnesing Model Checking for Distributed Algorithms).

Photo (c) Philipp Horak

In honor of Helmut´s advocacy for women in computer science, the TU Wien, the Wolfgang Pauli Institute, and Helmut´s friends and colleagues fund the Helmut Veith Stipend for Female Master´s Students.

Memorial site listing his achievements in academia and beyond:

http://www.vcla.at/2016/03/helmuth-veith-1971-2016

Organization

The VCLA is coordinated by the executive board in consultation with the local board while taking into account the strategic advice from the external advisory board.

Executive Board
Agata Ciabattoni (co-chair)
Thomas Eiter
Matteo Maffei
Reinhard Pichler
Stefan Szeider (co-chair)
Georg Weissenbacher

Local Board
Matthias Baaz
Pavol Cerny
Laura Kovács
Alexander Leitsch
Martin Nöllenburg
Magdalena Ortiz
Stefan Woltran

External Advisory Board	
Roderick Bloem (TU Graz)	Georg Gottlob (TU Wien/Oxford University)
Nadia Creignou (Université d'Aix-Marseille)	Anuj Dawar (University of Cambridge)
Fedor Fomin (University of Bergen)	Miroslaw Truszczynski (University of Kentucky)
Moshe Y. Vardi (Rice University)	

PR and Project Management
Mihaela Rozman
Alexandra Traxler (since March 2021)

Collaborations

The VCLA frequently collaborates with the following co-funding institutions:

- Kurt Gödel Society (KGS)
- Austrian Rigorous Systems Engineering (ARiSE)
- Wolfgang Pauli Institute (WPI)
- Institute of Science and Technology Austria (IST Austria)

Logic and Algorithms Groups

The Center is hosted by six research groups at the Faculty of Informatics:

- Algorithms and Complexity Group
- Database and Artificial Intelligence Group
- Formal Methods in Systems Engineering Group
- Knowledge-Based Systems Group
- Theory and Logic Group
- Security and Privacy Group

Obituary Edmund M. Clarke

We are deeply saddened by the loss of Edmund M. Clarke, who passed away in December 2020.

Edmund Clarke is best known for his work on Model Checking, an automated technique to check temporal logic properties of computer systems, for which he, Allen Emerson, and Joseph Sifakis received an ACM Turing Award in 2007. Model Checking had a tremendous impact in academia as well as industry, and is now routinely applied to verify hardware and software.

Edmund Clarke, who received an honorary doctorate from TU Wien in 2012, had close ties to Austria: as a mentor, friend, and scientific collaborator he was a positive influence and inspiration to numerous Austrian and Austria-based researchers in the field of formal methods and automated verification. His ideas and research were central to the Special Research Program on Rigorous Systems Engineering (funded by the Austrian Science Fund FWF), a joint research effort of 15 investigators in the field of automated verification and reasoning.

Photo (c) Nadja Meister

His highly influential publications on Counterexample-Guided Abstraction Refinement and Bounded Model Checking were co-authored by his then visitor Helmut Veith and postdoc Armin Biere, both of whom were later appointed full professors at Austrian universities. The late Helmut Veith shared a particularly close friendship with Edmund Clarke.

Edmund Clarke was a member of the advisory board of the FWF-funded doctoral college on Logical Methods in

Obituary Edmund M. Clarke

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Computer Science, a keynote speaker at the official opening of the Vienna Center of Logic and Algorithms, and an editor of the Handbook of Model Checking (with Thomas A. Henzinger, Helmut Veith, and Roderick Bloem).
He was a founder of the conference CAV on Computer-Aided Verification, which was held in Austria in 2014 as part of the Vienna Summer of Logic and co-chaired by members of the Austrian research community in 2013, 2014, and 2018.

Edmund Clarke shaped the field of automated verification. He and his work were instrumental to careers and research paths of many researchers in Austria, and will continue to serve as an inspiration for many generations of researchers to come.
Our thoughts are with Edmund Clarke's family. He will be remembered not only as a giant in computer science, but also as a great friend.

(written by Georg Weissenbacher)

http://www.vcla.at/2021/03/obituary-edmund-m-clarke/

Activities

The VCLA annual report summarises our activities throughout the year. This report provides details on the events between October 1, 2019 and September 30, 2020. We divide the activities presented in this report in the following subsections:

- LogicLounge (p. 12)

The LogicLounge is a series of public lectures, which brings together the general public and experts from the fields of logic, philosophy, mathematics, computer science, and artificial intelligence.

- Conferences and Workshops (p. 13)

They are organized by the members of the research groups hosting the VCLA.

- Educational Outreach and science communication (p. 19)

The VCLA is raising awareness about the field of logic and algorithms by running educational outreach projects for teachers and pupils, as well as science communication activities for the general public.

- VCLA International Awards (p. 28)

The annually awarded Awards aim to recognize and support students all over the world for their outstanding Master and Undergraduate Theses in the field of Logic and Computer Science.

- Helmut Veith Stipend (p. 30)

The Helmut Veith Stipend is awarded annually to excellent female students who pursue (or plan to pursue) one of the master's programs in Computer Science at TU Wien

- Cooperations (p. 31)

The VCLA cooperates with academic programs and initiatives, as well as with initiatives raising awareness about gender mainstreaming and diversity in the field.

Activities - LogicLounge

Working as Intended: Surveillance Capitalism is not a Rogue Capitalism (Cory Doctorow)

Due to the COVID-19 situation, the 17th public lecture in the series of Logic Lounges took place as a virtual lecture on July 21, 2020.

The LogicLounge with Cory Doctorow was hosted by the 32nd International Conference on Computer-Aided Verification (CAV) and organized by Aina Niemetz and Mathias Preiner of Stanford University in collaboration with the VCLA.

Cory Doctorow is a science fiction novelist, journalist, and technology activist, working as a special advisor for the Electronic Frontier Foundation (EFF). The "surveillance capitalism" thesis holds that companies spy because data lets them conduct devastatingly effective influence operations while racing past regulators who might otherwise rein in their operations.

Cory Doctorow believes this gives undue credence to Big Tech's sales literature while underplaying the role that monopoly and state surveillance play in both the decay of public discourse and governmental complacency when it comes to corporate surveillance.

Since its inception at the Vienna Summer of Logic in 2014, which brought together almost 3000 scientists in the fields of logic, philosophy, mathematics, computer science, and artificial intelligence, the LogicLounge continues to bring together general public and experts in public debates and discussions.

The LogicLounge has since become an event travelling between Vienna and the venue of the CAV conference, where it has already become a regular event in memoriam of Prof. Helmut Veith (1971-2016).

The recording is available:
http://www.vcla.at/logiclounge

Activities - Conferences

QONFEST 2020: Verifying Smart and Critical Systems

For the first time, between August 31 and September 5, 2020, Vienna was hosting QONFEST, a joint congress of the most important international scientific conferences and workshops on the topic of concurrency theory and its applications, timed systems, semantics, logics, and verification techniques.

Due to the current COVID-19 situation, QONFEST took place online.

QONFEST consisted of the conferences CONCUR (31st International Conference on Concurrency Theory), QEST (17th International Conference on Quantitative Evaluation of SysTems), FORMATS (18th International Conference on Formal Modeling and Analysis of Timed Systems) and FMICS (25th International Conference on Formal Methods for Industrial Critical Systems)

Research advances in cyber-physical systems augmented by machine learning and artificial intelligence promise to transform our world. However systems and software that operate in dangerous or unpredictable environments, provide large-scale distributed coordination, augment human capabilities, or enhance societal wellbeing are not without critical challenges.

QONFEST 2020 offered state-of-the-art research on all the concerns of the critical systems, cyber-physical systems, software systems driven by interoperable blockchain technology, as well as smart grids, health-care systems and logistics or industrial production processes.

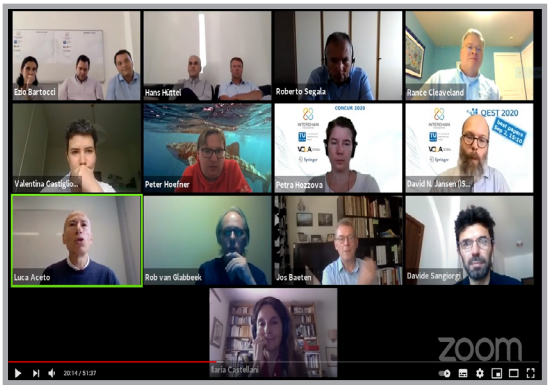
The organizers have managed to bring together researchers and practitioners from industry and academia who all seek to solve the main and basic demand of the users of technology: placing a high level of trust in the operation of the systems, whereas trust is a combination of many characteristics, mainly reliability, safety, security, privacy and usability.

https://qonfest2020.github.io/index.html

Activities - Conferences

...Continuation from page 13

QONFEST was organized by the Formal Methods in System Engineering Research Unit and Cyber-Physical System Research Unit at the TU Wien, and was supported by the Interchain Foundation, the Vienna Center for Logic and Algorithms of the TU Wien and by Springer.



"Social Online Lunch" during QUONFEST 2020

Invited Speakers

- Annabelle McIver (Macquarie University, Australia)
- Alessandro Abate (University of Oxford, UK)
- Tom Henzinger (IST Austria)
- Stefan Resch (Thales, Austria)
- Roderick Bloem (TU Graz)
- Evgenia Smirni (College of William and Mary, VA, USA)
- Catuscia Palamidessi (INRIA, France)

Organizers

- Ezio Bartocci (TU Wien), Chair
- Florian Zuleger, (TU Wien), Workshops Chair

CONCUR PC-Chairs

- Igor Konnov (INRIA Nancy, France)
- Laura Kovacs (TU Wien)

FMICS PC-Chairs

- Dejan Nikovic (AIT Austria)
- Maurice ter Beek (ISTI-CNR, Italy)

FORMATS PC-Chairs

- Nathalie Bertrand (INRIA, France)
- Nils Jansen (Radboud University Nijmegen, Netherlands)

QEST PC-Chairs

- Marco Gribaudo (Politecnico di Milano, Italy)
- David N. Jansen (Chinese Academy of Sciences, China)
- Anne Remke (University of Münster, Germany)

Publicity Chairs

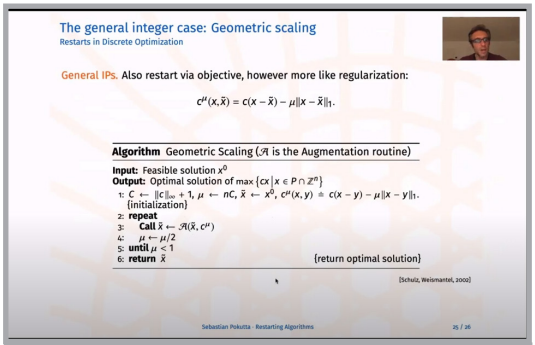
- Carlos E. Budde (University of Twente, Netherlands)
- Panagiotis Katsaros (Aristotle University of Thessaloniki, Greece)
- Ana Sokolova (University of Salzburg)

Activities - Conferences

CPAIOR 2020 – 17th International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research

CPAIOR 2020, 17th International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research, was organized in Vienna and held online September 21-24, 2020.

The aim of the conference is to bring together interested researchers from Constraint Programming (CP), Artificial Intelligence (AI), and Operations Research (OR) to present new techniques or applications and to provide an opportunity for researchers in one area to learn about techniques in the others.



Invited Speaker Sebastian Pokutta at CPAIOR 2020

The main objective of this conference series is also to give these researchers the opportunity to show how the integration of techniques from different fields can lead to interesting results on large and complex problems.

CPAIOR was organized by the Databases and Artifical Intelligence Group at the TU Wien and the Christian Doppler Laboratory for Artificial Intelligence and Optimization for Planning and Scheduling in collaboration with the Vienna Center for Logic and Algorithms of TU Wien. The conference was supported by TU Wien, the Artificial Intelligence Journal, FICO, Österreichische Post, The Vienna Convention Bureau and Springer.

Invited speakers

- Margarida Carvalho (Université de Montréal)
- Georg Gottlob (University of Oxford & TU Wien)
- Sebastian Pokutta (Technische Universität Berlin, Zuse Institute Berlin)
- Peter Stuckey (Monash University)

Activities - Conferences

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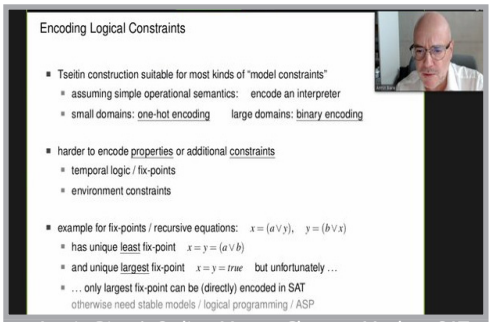
Additionally, the CPAIOR masterclass 2020 took place online on September 21.

The aim of the CPAIOR Master Class is to disseminate cutting-edge research in the areas of constraint programming, artificial intelligence, operations research, and the integration of these fields.

Master Class Speakers

- Armin Biere (JKU Linz)
- Inês Lynce (University of Lisbon)
- Günther Raidl and Andrea Schaerf (TU Wien and University of Udine)
- Timo Berthold (Fair Isaac Germany GmbH)
- Marie Pelleau (Université Nice Sophia-Antipolis)
- Laurent Perron and Frédéric Didier (Google Paris)



Armin Biere's Online Master Class on Modern SAT Solving

Master Class Online Recordings:

https://www.youtube.com/playlist?list=-PLir4BChYgk0f6mfDK12IFXwZVOtp3N_2D

Organizers

- Nysret Musliu (TU Wien), Conference Chair and Program Chair
- Emmanuel Hebrard (LAAS, CNRS, France), Program Chair

Master Class Organizers

- Emir Demirović (Delft University of Technology)
- Andrea Rendl (Satalia)
- Mohamed Siala (INSA Toulouse and LAAS-CNRS)

Local Organizing Committee

- Juliane Auerböck
- Tobias Geibinger
- Lucas Kletzander
- Florian Mischeck
- Mihaela Rozman
- Felix Winter

https://cpaior2020.dbai.tuwien.ac.at/

Activities - Workshops

First Vienna Workshop on Computational Social Choice

The goal of the 1st Vienna Workshop on Computational Social Choice was to bring together the growing community of researchers in Vienna interested in computational social choice and to connect them with leading experts in the field. The workshop took place on September 25, 2020 at TU Wien.

Computational social choice is a rapidly growing field of research at the intersection of computer sciences and economics, specifically social choice theory.

Its goal is the study of computational aspects of collective decision making.

On the one hand, computational social choice aims to apply techniques from (theoretical) computer science, such as complexity analysis and algorithm design, to questions of social choice theory, like voting and stable matching.

On the other hand, methods from social choice theory are applied to problems that appear in computer sciences, for example in network design or multiagent systems.

Thekla Hamm's Talk at the 1st Vienna Workshop on Computational Social Choice

The workshop was supported by the VCLA.

Invited Speakers

- Christian Klamler (Univ. Graz)
- Martin Lackner (TU Wien)
- Jérôme Lang (Université Paris-Dauphine)
- Jiehua Chen (TU Wien)
- Thekla Hamm (TU Wien)

Organizers

- Stefan Woltran (TU Wien)
- Martin Lackner (TU Wien)
- Jan Maly (TU Wien)

https://www.dbai.tuwien.ac.at/comsoc-workshop/

Activities - Workshops

Helmut-Veith-Memorial Workshop

The fourth workshop dedicated to the memory of Prof. Helmut Veith (1971-2016) took place in the skiing region at the border of Carinthia and Styria, between January 27 and January 29, 2020. The workshop is a continuation of Prof. Veith´s and Georg Moser´s idea to give the community of logicians in computer science an opportunity for lively academic debates amid the pristine nature of the Austrian Alps.

Since its creation in 2017, this series of workshops is breaking with the routine of academic meetings and is an example on how to engineer a scientific meeting that encourages thought and collaboration. Designed not only for established researchers but also for the doctoral candidates and students, the workshop has provided a forum for intense exchange with researchers such as Erich Grädel (RWTH Aachen), Janos Makowsky (Technion), Michael Tautschnig (Queen Mary University of London), and Moshe Vardi (Rice University), to mention a few.

Like its previous editions, the workshop in 2020 kept the proven format: in the morning the attendees offered a 30-minute talk about their work. In the afternoons, they split into groups to take advantage of the 42 km of skiing slops, the wellness offers

Gernot Salzer's talk at the 4th Helmut-Veith-Memorial Workshop

of the location and one-to-one discussions. The workshop brought together researchers with various research focus within the discipline of logic in computer science.

Invited Speakers

- Emir Demirovic (TU Wien)
- Rafael Kiesel (TU Wien)
- Anna Lukina (TU Wien)
- Michael Morak (TU Wien)
- Gernot Salzer (TU Wien)
- Friedrich Slivovsky (TU Wien)
- Anna Sokolova (U. of Salzburg)

Organizers

- Michael Morak (TU Wien)
- Anna Prianichnikova (TU Wien)
- Ana Sokolova (U. of Salzburg)

https://hvmw.github.io/hvw2020

Activities - Education

Project ADA: Algorithms Think Differently (Algorithmen Denken Anders)

ADA is a 3-year educational outreach program of the VCLA. The project is named after Ada Lovelace (1815 – 1852), who is considered the first computer programmer.

The project aims to engage pupils from 8 to 18 years old with unplugged computer science as well as programming activities which foster creative computational thinking, which shapes all areas of digitalization that is crucial for innovation, growth, employment, and competitiveness. Furthermore, the project ADA recognises the key role that teachers and educators play in introducing children to the fundamental concepts of computer science.

For some decades now – made public by the American computer scientist Jeanette Wing – it has been recognized that people who deal with computer science develop computational thinking.

It is a kind of thinking that is algorithmic and process-oriented, in which abstraction and efficiency play a special role.

The project ADA has been made possible by the funding of the Vienna Business Agency and the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (Former BMVIT). The cooperation partners of the project are Informatik Austria, Austrian Computer Association (OCG), eEducation Austria, Future Learning Lab of PH Wien, and EIS – Education Innovation Studios of Federal Ministry for Education (BMB).

The following ADA activities were organized from Oct. 2019 to Sept. 2020:

- Workshop - Introduction to Scratch
  as part of EU Code Week
- 24 Hour Hackathon & Hackathon for good Artificial intelligence
  as part of EU Code Week & DigiEduHack
- Science communication events
  Digital Days 2019
  eEducation Austria Praxistage 2019
  Hexagonal Debate 2020
- Diary of a computer scientist
  Nation-wide workshop series for girls led by female computer scientists

www.ada.wien

Activities - Education

Workshop - Introduction to Scratch

On October 14, 2019, the Vienna Center for Logic and Algorithms of TU Wien in collaboration with the Future Learning Lab Wien organized the workshop "Introduction to Scratch – For Good Artificial Intelligence (AI)" part of Europe Code Week.

More than 40 pupils between the ages of 13 and 15 took part. They were coming from Viennese school classes which are confronted with language barriers and socio-economic hurdles of their pupils with immigrant backgrounds.

In this workshop the pupils had the opportunity to develop a basic understanding of Scratch, a freely accessible programming language working on a browser.

At the same time, the kids were encouraged to reflect on the relationship between digital skills and the creation of technology which can help us to overcome the global environmental challenges.

The workshop was opened by Johannes Stangl, computer scientists and Activist of Fridays for Future Vienna, who presented resources on the challenges for biodiversity.

The activity was part of project ADA run by VCLA of TU Wien, and funded by Vienna Business Agency and BMVIT.

https://www.ada.wien/2291/

Johannes Stangl, Hermann Morgenbesser, Klaus Himpsl-Gutermann

Johannes Stangl with the workshop participants

Activities - Education

24h Hackathon: DigiEduHack 2019

On October 3, 2019 the Vienna Center for Logic and Algorithms of TU Wien organized a 24hours long virtual hackathon. The Hackathon was part of DigiEduHack, happening simultaneously in Europe, Africa, Asia, South, and North America, bringing participants together from all over the world. Hackathon for Good AI is not only about programming skills – it encompasses the drive of TU Wien – a reflection on the usage of the technology, which we are co-creating.

On this DigiEduHack activity, the pupils, aged 14-17, from EduDigiHack participating countries, have had the chance to solve real challenges and connect fostering of digital skills with a reflection on the sustainability issues of the modern world.

The task was to design a chatbot programmed in Scratch, which is open access programming language on a desktop-based programming interface. Out of 31 registrations the jury selected three winners, who received cash prizes from the award fund of EUR 500.

The Digital Education Hackathon (#DigiEduHack) is an EIT project funded by the European Commission under the Digital Education Action Plan and was part of VCLA's project ADA.

Winner Teams

1st place: GreenLight Chatbot from HTL Ottakring

2nd place: Kevin the helpful recycle AI from HTL Wiener Neustadt

3rd place: HTLHack Chatbot from HTL Wiener Neustadt

Jury

Martin Lackner (TU Wien)

Neha Lodha (TU Wien Alumni, Mondi)

Revantha Ramanayake (TU Wien)

https://www.ada.wien/virtual-hackathon-4-good-ai/

1st place Winner Team of the DigiEduHack 2019: "Green Light Chatbot"

Activities - Education

Hackathon 4 Good Artificial Intelligence 2019

The Austrian Edition of the Hackathon 4 Good AI was part of EU Code Week and took place October 5-20, 2019.

In this Hackathon, the pupils' task was to code a chatbot in Scratch which is able to help the user to lower one´s CO2 footprint, proper recycling, or choose sustainable transport on one´s root to school.

"The Hackathon for good AI is a good opportunity for young people to playfully deal with the topics of the future, and to reflect on the power digital technology has in tackling challenges for global development and security, such as climate change", says Meral Akin-Hecke, who was Austria's Digital Ambassador from 2013 to 2017 as part of the "Digital Champions" initiative of the then EU Commissioner for the Digital Agenda, Neelie Kroes.

The task of the Digital Champions is to pave the way for as many Europeans as possible to access the Internet and to support them in dealing with digital media.

Nearly 200 pupils from schools over Austria accepted the challenge to create a chatbot and the jury selected 3 winner teams who received cash prizes from the award fund of EUR 2000.

Winner Teams

1st place: ScratchTheWaste

2nd place: TeamZinebselina

3rd place: Wbsp

Special Prize: Tech Lab K050

Jury

Meral Akin-Hecke (Digital Champion Austria)

Agata Ciabattoni (TU Wien)

Neha Lodha (TU Wien Alumni, Mondi)

Revantha Ramanayake (TU Wien)

Johannes Stangl (President IG Wien)

Stefan Szeider (TU Wien)

https://www.ada.wien/hackathon-4-good-ai/hackathon-fur-gute-ki/

Activities - Education

Digital Days 2019

During the Digital Days 2019 edition (November 4-5) at ERSTE Bank Campus, VCLA's project ADA was part of the IT exhibition in DigiStreet.

At the ADA booth, visitors could watch the video of the world's largest sorting network which was performed in front of Ernst Happel Stadium in September 2019 with 50 high-school pupils.

In addition to that, people could also participate actively in a smaller version of the sorting network for up to 6 people.

This sorting exercise is also part of the CS Unplugged free teaching material collection that teaches Computer Sciences through interactive games and puzzles and is now also available in German.

A Smaller Depiction of the Sorting Network at the Project ADA booth

Stefan Szeider with pupils at the Project ADA booth

More on CS Unplugged:

https://www.ada.wien/cs-unplugged-materialiensammlung/

Another hands-on activity presented to interested visitors during the event was the folding instruction for an origami - crane. The folding process for the origami is the depiction of an algorithm and the activity itself supports arithmetic thinking.

https://www.ada.wien/digitaldays-2019-2/

Origami Folding as the depiction of an algorithm

Activities - Education

eEducation Austria Praxistage 2019

On the occasion of eEducation Austria Didaktik Fachtagung 2019 (Nov 7-8) Stefan Szeider held a short presentation about computational thinking and also informed the audience about the brand-new German language version of the free teaching material collection CS Unplugged, promoted by VCLA's Project ADA.

The eEducation symposium for teaching methodology (as part of the trade fair Interpädagogica 2019) was hosting keynotes, workshops and short lectures about the usage of digital media in schools, the importance of media education and -amongst others - contributions about computational thinking, gamebased learning and best practice examples.

Stefan Szeider (TU Wien) at eEducation Austria Didaktik Fachtaung

Hermann Morgenbesser, project member of ADA was also participating at Interpädagogica. He organized a live learning session at Future Learning Lab Vienna's Maker Space where pupils could create their own T-Shirt design and learn about the programming and use of a 3D - printer.

Hermann Morgenbesser at Future Learning Lab Vienna's Maker Space

https://www.ada.wien/eeducation-austria-fachtagung-2019/

Activities - Education

Hexagonal Debate 2020: How to inspire girls for technology & computer science?

On 20 January 2020, representatives of Austrian organizations interested in the topic of under representation of school girls in MINT fields, gathered at the discussion panel with the title "Diary of a Computer Scientist – How to get girls excited about technology & computer science?" The event was organized by the Future Learning Lab Vienna together with the Vienna Center for Logic and Algorithms (VCLA) of the TU Wien.

An important aim of the event was to bring together people and organizations that have been leading interesting initiatives on the topic of "Girls 4 MINT" for years throughout Austria. The abbreviation MINT stands for the fields of mathematics, computer science, natural sciences and technology.

Evelyn Süss-Stepancik, Vice Rector of the Vienna University of Education, held the opening remarks. Prof. Martina Lindorfer (TU Wien), winner of the Hedy Lamarr Prize 2019 of the City of Vienna, gave a thematic introduction in which addressed, among other, the obstacles that women have to overcome in the field of computer science and how MINT can help shape competences.

Afterwards, eight female stakeholders from all over Austria presented their activities and research projects in the area of "Girls 4 MINT" in short speeches.

The participating organizations presented projects of the Vienna Center for Logic and Algorithms (VCLA) of TU Wien, the Office for Gender Equality and Women's Advancement of the Graz University of Technology, IT-Women of the OCG, PH Wien, the KinderUni of the University of Vienna, the EU Code Week in Austria, MINT Salzburg, the OVE-Fem initiative Girls! TECH UP initiative, and the Austrian Research Promotion Agency (FFG).

The event concluded with a summary and an outlook for the future, on which everyone agreed: It would be desirable to have a common community of practice and an Austria-wide platform on which projects can be planned together and experiences can be exchanged. The result of the meeting was the creation of a common digital platform, which would enable the coordination of activities across the provinces.

http://www.vcla.at/events/diary-of-a-computer-scientist-or-how-to-inspire-girls-for-technology-computer-science-hexagonal-diskutiert/

Activities - Education

Workshop series: Diary of the computer scientist

Various studies (see UNESCO: Cracking the Code, 2017) show that at the age of 11 or 12, girls are very interested in technical subjects. At the age of 15 or 16, however, this interest decreases significantly. One reason for this is the lack of female role models. Even if more and more women are successful as computer scientists, many girls do not know about female computer scientists which could serve as as positive role models in their everyday lives.

This is precisely the gap that is being addressed by the activity "Diary of the Computer Scientist (Tagebuch der Informatikerin)", as part of the ADA project. Diary of the Computer Scientist is a workshop series with the aim to inspire girls between the ages of 13 and 16 for technology and computer science.

Workshop with Hilda Tellioğlu (TU Wien) as a female computer scientist role model

The format of the 45 minutes-workshop is to give the participating female pupils an opportunity to get in touch with a female computer scientist who is presenting the field of computer science as such, as well as her personal story, and allows the participating girls to share their own worries, or passions.

The workshop takes place in the school classes across Austria in order to ease the organizational work of the teachers and making the event more accessible.

"Tagebuch der Informatikerin" - School Workshop in Linz

Photo (c) Jean Hallewell

Almost 300 female pupils between the ages of 13 and 15 participated in the first pilot installment of the workshop series. Workshops were held in schools in Vienna, Krems, Graz, Salzburg, and Linz. In cooperation with Abenteuer

Activities - Education

...Continuation from page 26

Informatik, the organizers also offered pilot workshops for boys, where they could try out practical activities fostering computational thinking. The workshops took place between mid-January 2020 and mid-February 2020. "The demand from schools was much greater than we had imagined", says Agata Ciabattoni, vice chair of VCLA.

Among the computer scientists and experts who participated as female role models are professors of TU Wien: Dean Prof. Gerti Kappel, Prof. Hilda Tellioglu (Visual Computing & Human-Centered Technology), Prof. Margit Pohl (Human Computer Interaction) and Ass.-Prof. Martina Lindorfer (Security and Privacy).

"Tagebuch der Informatikerin" - School Workshop with Martina Lindorfer (TU Wien)

The workshops outside of Vienna were led by computer scientists such as Marlies Temper (FH St. Pölten), Corinna Kröhn (JKU Linz), Jean Hallewell (FH Upper Austria), Ana Sokolova (University of Salzburg), Johanna Pirker (TU Graz) and Birgit Hofer (TU Graz).Corinna Kröhn (JKU Linz), Jean Hallewell (FH Upper Austria), Ana Sokolova (University of Salzburg), Johanna Pirker (TU Graz) and Birgit Hofer (TU Graz).

The activity Diary of the Computer Scientists is part of Project ADA, led by VCLA, and funded by the Vienna Business Agency and the Austrian Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK).

The activity takes place in cooperation with national network Informatik Austria, Austrian Computer Society – OCG, eEducation Austria, and EIS Education Studios of the BMB and Future Learning Lab.

The workshops started in 2020 and will take place until 2022.

http://www.vcla.at/2020/06/workshop-series-diary-of-a-computer-scientist/

Activities - Distinction

VCLA International Student Awards 2020

The VCLA International Student Awards are presented annually. The winners are invited to attend the award ceremony, and they receive a cash prize from an award fund of 2000 EUR. Since 2016 the awards are dedicated to the memory of the initiator of the distinction, Helmut Veith (1971-2016).

The highly successful fifth edition of the VCLA International Student Awards was concluded in July 2020 with the celebration of two winners in two award categories.

Based on an international Call for nominations, the award committee announced one

- Outstanding Master Thesis Award

and one

- Outstanding Undergraduate Research Award.

The nominated Master and Bachelor thesis had to be awarded between 15.11.2018 and 31.12.2019 (inclusive).

Congratulation to the following award recipients:

Master Thesis Award

Karolina Okrasa –

Thesis: Complexity of variants of graph homomorphism problem in selected graph classes

Supervisor: Paweł Rzążewski (Warsaw University of Technology, Poland)

Master Thesis Award Winner: Karolina Okrasa

Photo (c) Karolina Okraksa

Activities - Distinction

... Continuation from page 28

Outstanding Undergraduate Award

Antonin Callard –

Thesis: Topological analysis of represented spaces and computable maps, cb0 spaces and non-countably-based spaces

Supervisor: Mathieu Hoyrup (ENS Paris-Saclay, France)

Undergraduate Thesis Award Winner: Antonin Callard

Photo (c) Antonin Callard

Award Ceremony

Unfortunately, due to Covid-19, the usual award ceremony in Vienna for the winners had to be cancelled. Nevertheless, the proud winners were awarded with the VCLA International Student Awards Certificate and the prize.

Award Committee

- Shqiponja Ahmetaj
- Ezio Bartocci
- Ekaterina Fokina
- Robert Ganian (co-chair)
- Benjamin Kiesl
- Martin Lackner
- Bjoern Lellmann
- Anna Lukina
- Laura Nenzi
- Johannes Oetsch
- Magdalena Ortiz (chair)
- Revantha Ramanayake (co-chair)
- Zeynep G. Saribatur
- Mantas Simkus
- Sebastian Skritek
- Friedrich Slivovsky
- Max Tschaikowski
- Johannes P. Wallner

http://www.vcla.at/vcla-awards/

Activities - Distinction

Helmut Veith Stipend Winner

Helmut Veith (1971-2016) was a strong advocate and mentor for women in computer science. To honour Helmut's efforts, a stipend for outstanding female students in computer science was established in 2017 with the financial support of TU Wien, the Wolfgang Pauli Institute, and generous donations of friends and colleagues of Prof. Veith.

The fourth recipient of the annually awarded Helmut Veith Stipend for outstanding female master's students in computer science is Daniela Martinez Duarte who holds a Bachelor of Science Degree in Electronic engineering from Javeriana University in Cali, Colombia.

4th Recipient of the Helmut Veith Stipend 2019

Photo (c) Daniela M. Duarte

Ms Martinez Duarte graduated in 2019, with an award for academic excellence recognizing her outstanding score at the Colombian State Examination of the Quality of Higher Education (Saber pro).

In 2016 she received a scholarship by the DAAD for an exchange semester at the Karlsruhe Institute of Technology (KIT) and for a subsequent internship.

She participated and took the 4th place in the group competition for the generation of open-data-based solutions to "citizen security" challenges organized by the U.S. Agency for International Development.The Helmut Veith Stipend is dedicated to the memory of an outstanding computer scientist who worked in the fields of logic in computer science, computer-aided verification, software engineering, and computer security.

Students who are awarded a scholarship receive EUR 6000 annually, and a waiver of all tuition fees at TU Wien. The annual deadline is November 30.

Due to the COVID-19 situation the ceremony for Ms. Duarte had to be postponed.

http://www.vcla.at/helmut-veith-stipend/

Activities - Cooperation

4th Women in Logic Workshop

Women in Logic 2020 was part of "Paris Nord Summer of LoVe 2020", a joint event on LOgic and VErification originally hosted at the Université Paris 13, made of Petri Nets 2020, IJCAR 2020, FSCD 2020, and over 20 satellite events.

Due to the Covid-19 outbreak, the main conferences of Paris Nord Summer of LoVe as well as the 4th Women in Logic Workshop took place virtually. Among the 145 registered participants, the WiL 2020 featured talks by 45 people, next to the virtual poster session and 2 invited speakers.

The annual Women in Logic Workshops (WiL) provide an opportunity to increase awareness of the valuable contributions made by women in the area of logic in computer science. Its main purpose is to promote the excellent research done by women, with the ultimate goal of increasing their visibility and representation in the community.

Graphic: https://sites.google.com/g.uporto.pt/wil2020/home

SIGLOG/VCLA Travel Awards

To facilitate students and postdocs, who are the authors of accepted contributions, to register and travel to the WiL, the ACM SIGLOG and the VCLA continue to sponsor the SIGLOG/VCLA Travel Awards. The awardees are reimbursed for a part of their travel expenses, and registration costs.

However, due to the virtual nature of the WiL 2020, the ACM SIGLOG/VCLA/ILLC Travel Awards are expected to be administered again in 2021.

Invited Speakers

- Maribel Fernández (Kings College London)
- Alexandra Silva (Univ. College London)

Organizers

- Sandra Alves (Co-Chair, University of Porto)
- Amy Felty (University of Ottawa)
- Delia Kesner (Université de Paris)
- Sandra Kiefer (Co-chair, RWTH Aachen University)
- Koko Muroya (RIMS Kyoto University)
- Daniele Nantes (University of Brasília)
- Valeria de Paiva (Samsung Research America)
- Brigitte Pientka (McGill University)
- Sonja Smets (ILLC - University of Amsterdam)
- Ana Sokolova (Co-chair, University of Salzburg)

https://sites.google.com/g.uporto.pt/wil2020

Activities - Cooperation

Vienna Ball of Sciences

Since 2015, the Vienna Center for Logic and Algorithms is a proud partner of the Vienna Ball of Sciences. The cooperation was co-initiated by Prof. Helmut Veith †. In collaboration with researchers and doctoral candidates of the FWF funded doctoral college Logical Methods in Computer Science – LogiCS, VCLA has since then contributed to the ball´s scientific character with activities that stir curiosity, such as logic riddles and human-machine interaction.

The Ball's sixth edition took place on January 25, 2020, in the Vienna City Hall.

On this occasion the logician and computer scientist, Kees van Berkel, gave the attendees of the Ball a chance to try solving his adaptation of the legendary Einstein riddle – the Bee puzzle.

Kees van Berkel with the proud winners of his bee puzzle

The origin of the Zebra puzzle, commonly referred to as Einstein's riddle, has been accredited to Einstein as well. Unfortunately, there is no evidence for either of the claims.

The community of logicians at the Vienna Ball of Sciences 2020

Kees van Berkel modified the Zebra puzzle and adjusted it to the theme of this year's Vienna Ball of Sciences: bees and biodiversity. The "Bee Puzzle" is the result and according to the creator "just like with the original puzzle, with basic logical reasoning, one will be able to solve it."

The first ball attendees who successfully solved the puzzle received their own copy of the graphic novel "Logicomix" created by A. Doxiadis and C. H. Papadimitriu or the copy of the Wittgesteins Welt by H. Depner, allowing the reader to compile Wittgestein's Tractatus in 3D format.

http://www.vcla.at/events/vienna-ball-of-sciences-2020-6-wiener-ball-der-wissenschaften/

Activities - Cooperation

Logical Methods in Computer Science

The Doctoral College Logical Methods in Computer Science (LogiCS) is a PhD degree program funded by the Austrian Science Fund (FWF), and run jointly by three Austrian universities (TU Wien, TU Graz and JKU Linz).

LogiCS was established in March 2014 by Helmut Veith† and Stefan Szeider. In 2017, the funding body renewed the grant of the PhD program for another 4 years. The speaker of the new LogiCS is Georg Gottlob, the co-speaker is Stefan Szeider.

The faculty of the LogiCS comprises renowned researchers with strong records in research, teaching and advising.

logics LOGICAL METHODS IN COMPUTER SCIENCE

The program is aimed at highly motivated students who want to develop new logical methods and databases, Artificial Intelligence and verifications as well as applying them to solving problems in emergent areas like Security and Privacy, Cyber-Physical Systems, and Distributed Systems.

The program has been very successful so far: It attracted 69 excellent students worldwide, of which 41% percent are female doctoral candidates.

http://logic-cs.at/phd

Several of the LogiCS students

© Sara Meister

Invited Speakers and Visitors

Several talks by speakers from countries across the world have been hosted by the VCLA during the past year. However, due to the restrictions of the COVID-19 pandemic, most of the events and talks in 2020 had to be postponed, cancelled or took place online. A list of these talks with abstracts is available at http://www.vcla.at/category/talks

September 23, 2020

Margarida Carvalho (Université de Montréal)

Algorithmic approaches for integer programming games and a story on policy making

September 22, 2020

Georg Gottlob (University of Oxford & TU Wien)

Hypertree Decompositions: Questions and Answers

September 24, 2020

Sebastian Pokutta (Technische Universität Berlin, Zuse Institute Berlin)

Restarting Algorithms: Sometimes there is Free Lunch

September 23, 2020

Peter Stuckey (Monash University)

Combinatorial Optimisation for Multi-Agent Path Finding

July 21, 2020

Cory Doctorow (Science Fiction author, technology activist and journalist):

Working as intended - Surveillance Capitalism is not a Rogue Capitalism

December 13, 2019

Torsten Schaub (University of Potsdam):

Dynamic Answer Set Programming

Invited Speakers and Visitors

December 4, 2019

Joost-Pieter Katoen (RWTH Aachen University):

Probabilistic Programming: Machine Learning for the Masses?

November 28, 2019

Ringo Baumann (Leipzig University):

An Abstract, Logical Approach to Characterizing Strong Equivalence in Non-monotonic Knowledge Representation Formalisms

November 27, 2019

Dominique Larchey-Wendling (CNRS):

Hilbert's Tenth Problem in Coq

November 20, 2019

Tommaso Moraschini (University of Barcelona):

Profinite Heyting algebras and the representation problem for Esakia spaces

November 11, 2019

Prafullkumar Tale (Institute of Mathematical Sciences):

Lossy Kernels for Graph Contraction Problems

November 6, 2019

Davide Grossi (University of Groningen):

Credulous Acceptability, Poison Games and Modal Logic

October 16, 2019

David Cerna (JKU Linz):

A Mobile Application for Self-Guided Study of Formal Reasoning

October 1, 2019

Gerd Brewka (Leipzig University):

Admissibility and Completeness Revisited

Media Coverage

The VCLA was present in the media through its members and activities.

September 30, 2020
Der Standard
Was wollen wir künstlicher Intelligenz erlauben?
https://www.derstandard.at/story/2000120270228/was-wollen-wir-kuenstlicher-intelligenz-erlauben

September 23, 2020
Der Standard
Woche für gute KI
https://www.derstandard.at/story/2000120265584/wer-forscht-denn-da-oeffentliche-termine-der-naechsten-wochen

September 19, 2020
Die Presse (TU Magazin)
Mathematische Präzision für ethische Argumente
https://issuu.com/tuwien/docs/tu_wien_magazin_06_2020/s/11015983

September 16, 2020
Der Standard
Kontrollieren, was die künstliche Intelligenz darf
http://www.vcla.at/wp-content/uploads/2020/10/Was-KI-darf.pdf

September 9, 2020
Computerwelt
#4GoodAI – Einladung zur virtuellen Woche für gute Künstliche Intelligenz
https://computerwelt.at/news/4goodai-einladung-zur-virtuellen-woche-fuer-gute-kuenstliche-intelligenz/

August 26, 2020
Computerwelt
Mehr Frauen-Power in der IT-Branche
https://computerwelt.at/printausgabe/mehr-frauen-power-in-der-it-branche/

Media Coverage

March 6, 2020
Der Standard
Wie man Zweifeln von Frauen in der IT den Stecker zieht
https://www.derstandard.at/story/2000115287322/wie-man-zweifeln-von-frauen-in-der-it-den-stecker

March 4, 2020
Der Standard
Informatik unplugged soll Image wandeln
https://www.pressreader.com/austria/der-standard/20200304/281968904733669

January 24, 2020
Studium.at
Vienna Ball of Sciences 2020 with VCLA of TU Wien
https://www.studium.at/vienna-ball-sciences-2020-vcla-tu-wien-25-01-2020

January 10, 2020
Die Presse
Bewusst für die Uni entschieden
https://www.diepresse.com/5750200/bewusst-fur-die-uni-entschieden?fbclid=IwAR-2PR4mh_As21MAMrW_ivpM-PcLNPUAA_AilyD9Ydz1WFEJuXlfz6suE9JA

January 10, 2020
meinbezirk.at
Computer als Entscheidungshelfer
https://www.meinbezirk.at/wieden/c-lokales/computer-als-entscheidungshelfer_a3859455

January 8, 2020
Informatik Austria
"Tagebuch der Informatikerin" – Mädchen für Informatik begeistern
https://www.informatikaustria.at/2020/01/08/tagebuch-der-informatikerin-maedchen-fuer-informatik-begeistern/

Media Coverage

2019

December 1, 2019

OCG Journal

Das größte menschliche Sortiernetzwerk der Welt

https://www.ocg.at/sites/ocg.at/files/medien/pdfs/OCG-Journal1902.pdf

December 2019, 2019

TU Wien alumni club Bulletin 48

Logic is Everywhere

https://issuu.com/tuwienalumniclub/docs/bulletin_48_2020_low

December 14, 2019

Der Standard

Das sagen Forscherinnen zu Robotik

https://www.derstandard.at/story/2000112235040/das-sagen-forscherinnen-zu-robotik

November 29, 2019

Der Standard

Wenn Mathematik glücklich macht

https://www.derstandard.at/story/2000111506789/wenn-mathematik-gluecklich-macht

November 27, 2019

Der Standard

Wochenenden voller Mathematik

https://www.pressreader.com/austria/der-standard/20191127/282209422706574

November 18, 2019

Interview in NÖ Nachrichten

Absolventen sind exzellente Studenten

http://www.vcla.at/wp-content/uploads/2020/01/Absolventen-sind-exzellente-Studenten.pdf

Media Coverage

November 5, 2019
Brandaktuell
Martina Lindorfer erhält Hedy Lamarr Preis der Stadt Wien
https://brandaktuell.at/2019/11/05/kultur/martina-lindorfer-erhaelt-hedy-lamarr-preis-der-stadt-wien/

November 2, 2019
Telekommunikations- & IT Report
Menschliches Sortiernetzwerk

October 29, 2019
Printed edition of Telekommunikations- & IT Report
Menschliches Sortiernetzwerk

October 28, 2019
APA Science
Helmut Veith Stipendium für Viktoriia Korchemna

October 8, 2019
Lehrerweb.at
Hackathon für SchülerInnen: Scratch-Chatbot gesucht
https://lehrerweb.wien/aktuell/single/news/hackathon-fuer-schuelerinnen-scratch-chatbot-gesucht/

October 4, 2019
APA Science
TU Wien nimmt am DigiEduHack 2019 teil
https://www.ada.wien/tu-wien-nimmt-am-digieduhack-2019-teil/

October 2, 2019
Computerwelt
Hackathon für gute künstlichen Intelligenz: TU Wien sucht Schülerinnen und Schüler
https://computerwelt.at/news/hackathon-fuer-gute-kuenstlichen-intelligenz-tu-wien-such-schuelerinnen-und-schueler/

VCLA Chairs

Agata Ciabattoni and Stefan Szeider, co-chairs of the VCLA since December 2017

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Agata Ciabattoni and Stefan Szeider are co-chairs of the Vienna Center for Logic and Algorithms. Stefan Szeider and Helmut Veith (1971-2016) founded the VCLA in 2011, assuming chair's strategic leadership over its activities.

Agata Ciabattoni is a full professor at TU Wien. In 2011 she has been awarded a START prize, the highest Austrian award for early career researchers, for her project Non classical proofs: Theory, Applications and Tools.

Agata Ciabattoni is mainly working in non-classical logics: proof theory, semantics and applications in various fields, ranging from programming languages to Indian Philosophy.

Stefan Szeider is a full professor at TU Wien and head of the Algorithms and Complexity Group. He is also the deputy speaker of the Doctoral Program Logical Methods in Computer Science, and scientific co-organizer of the Vienna Gödel Lectures.

In his research, Szeider combines algorithmic and logic-based methods for the efficient solution of hard problems that arise in Artificial Intelligence, Automated Reasoning, and Combina-torial Optimization, complemented by complexity-theoretic methods for es-tablishing theoretical limits and lower bounds.

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