

BSc & MSc
Computational
Science and
Engineering (CSE)

Annual Report
2021/2022

BSc & MSc CSE

BSc & MSc Computational Science and Engineering

**Annual Report
2021 / 2022**

August 2021 to July 2022

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Editors:

Vasile Gradinaru, Ralf Hiptmair
ETH Zürich

PDF files of this report are available from:

Dr. Vasile Gradinaru
Seminar for Applied Mathematics
Tel.: 41 44 632 3448
E-mail: rw-cse@ethz.ch

or may be downloaded from:

rw.ethz.ch/documents.html

CSE curricula at ETH Zürich on the internet:

rw.ethz.ch

Cover:

Illustration of the predicted segmentation with the ground truth, the prediction error, the estimated aleatoric and epistemic uncertainty
from the Bsc Thesis “Bayesian Deep Learning for Flood Detection” of the Bsc-CSE student Timofey Shpakov, 2022.

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Teaching in BSc and MSc CSE 1

Teaching in Computational Science and Engineering

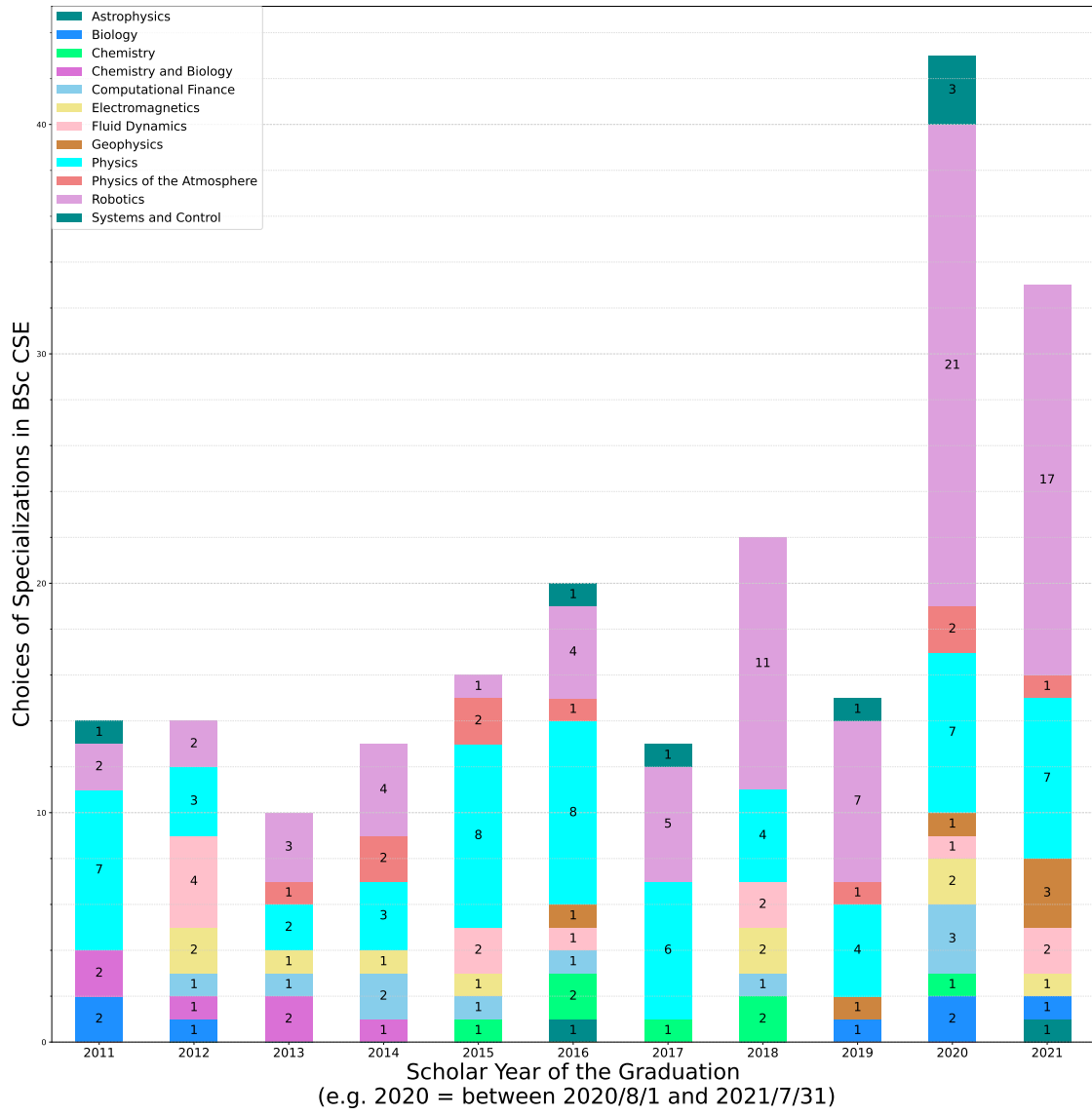
The academic year 2021/22 was partially still affected by special conditions and restrictions due to the Covid-19 pandemic.

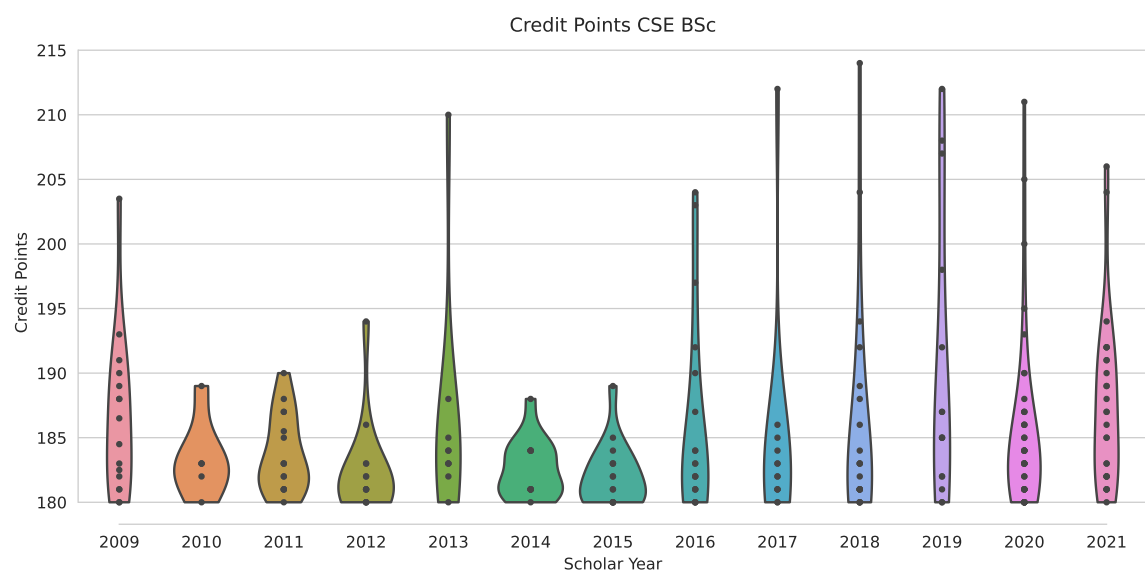
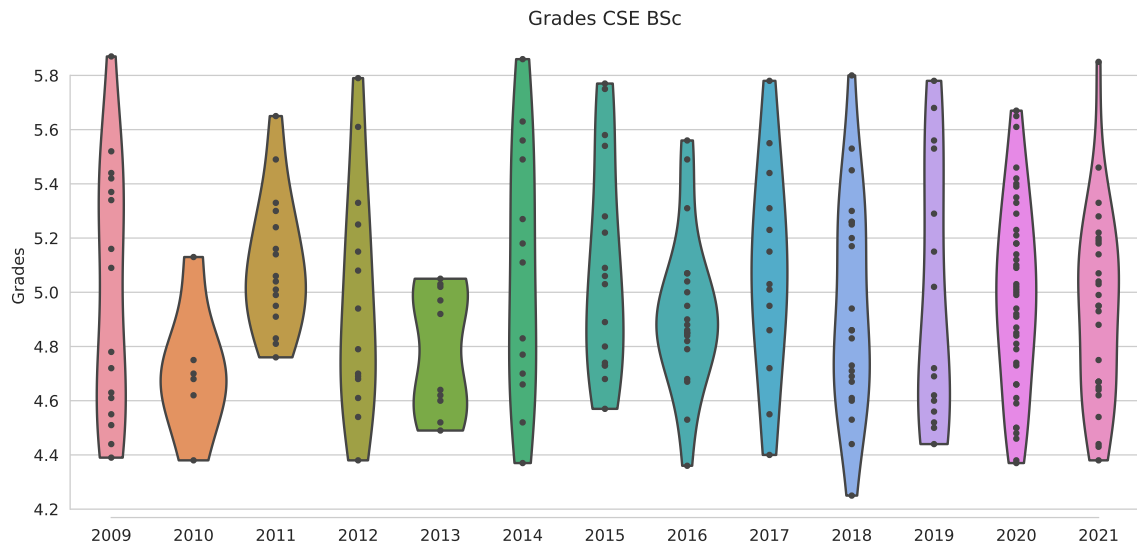
The welcome of the first semester students in BSc and in MSc CSE was conducted as usual in ETH main building, respecting the rules of social distancing. However, it was not possible to hold the traditional start-of-semester reception in autumn 2021. Lectures, seminars and Case Studies were held mainly in presence and in parallel online.

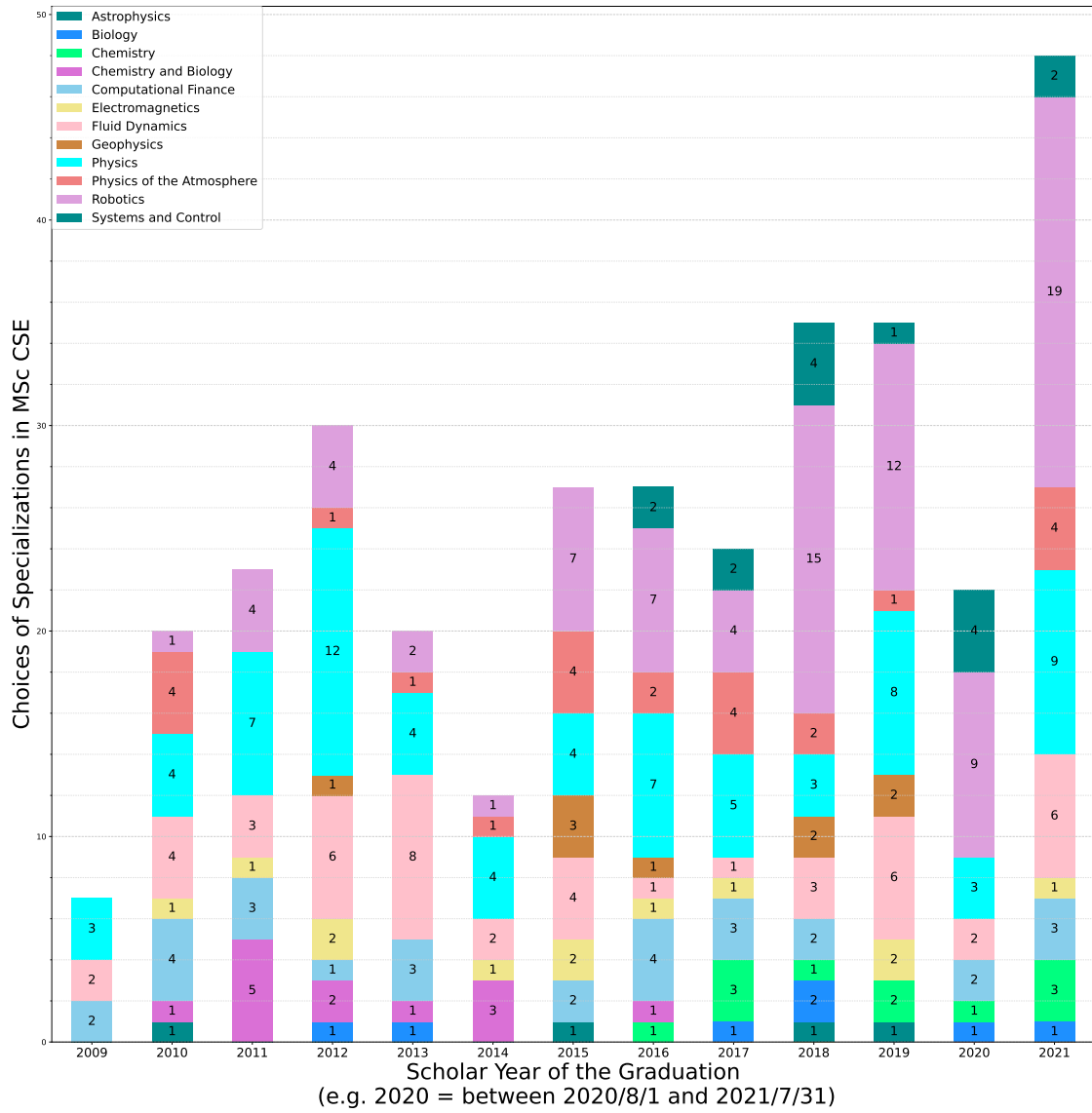
In the winter examination session 2022, 78.6% of the 57 participating students passed the first Basisprüfungsblock, 86.5% passed the exam block *G1* and 91.3% passed the block *G2*. The lecture *Design of Parallel and High-Performance Computing* was chosen by 10 students, all of them passed. The lecture *High Performance Computing for Science and Engineering I* was chosen by 16 students, all of them passed. Popular lectures among the BSc CSE students in Fall 2021 were: *Atmosphäre* (8), *Information Systems for Engineers* (7), *Theory of Robotics and Mechatronics* (7), *Physically-Based Simulation in Computer Graphics* (6) and *Introduction to Computational Physics* (5). In the *Case Studies Seminar* in Autumn 2020 a number of 36 BSc CSE and 41 MSc CSE students participated with success. The lecture *Advanced Numerical Methods for CSE* in Autumn 2021 was again very popular among the MSc CSE students (30). Also popular were *Advanced Machine Learning* (12), *Dynamic Programming and Optimal Control* (11) and *Financial Market Risks* (9).

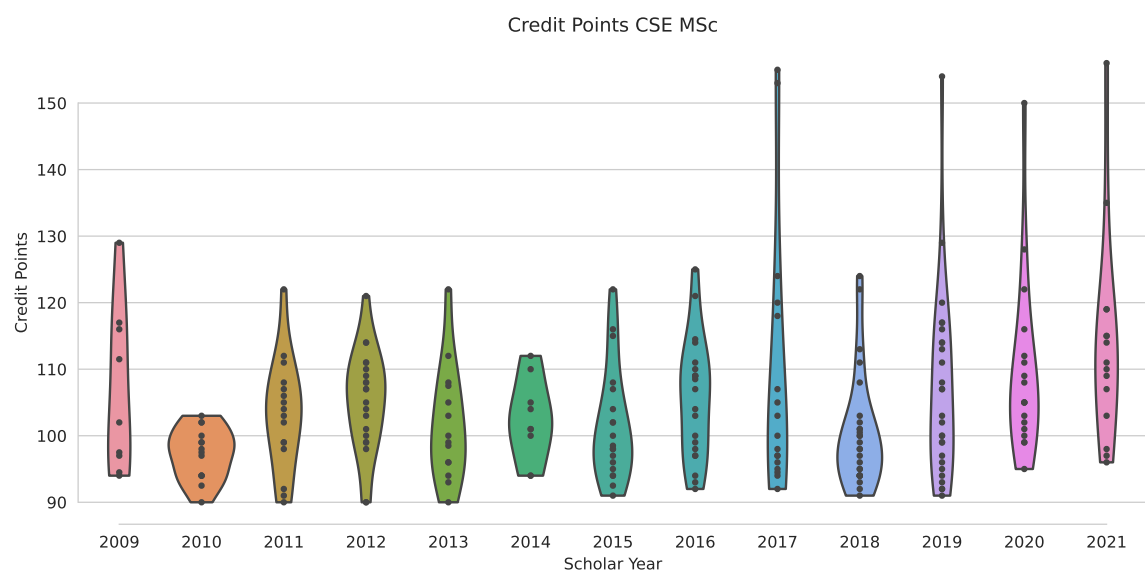
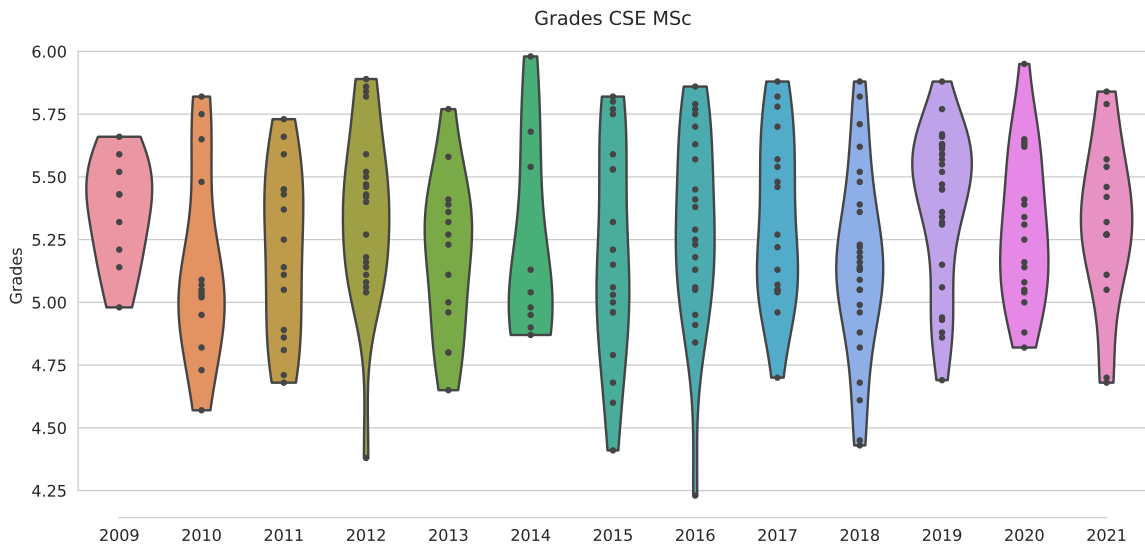
In the summer examination session 2022, 85.2% of the 56 participating students passed the second Basisprüfungsblock, 89.4% passed the exam *G3* and 68.1% passed the block *G4*, which seems to be the most difficult exam block of the curriculum. All of the 7 students attending *High-Performance Computing Lab for CSE* passed, while 6 of the 12 participating students passed *High Performance Computing for Science and Engineering II*. Popular lectures among the BSc CSE students in Spring 2021 were: *Introduction to Machine Learning* (24) and *Software Engineering* (13). The *Case Studies Seminar* Spring 2021 was successfully attended by 27 BSc CSE and 35 MSc students. Popular lectures among the MSc CSE students in Spring 2022 were: *Deep Learning in Scientific Computing* (31), *Advanced Systems Lab* (10), *Computational Statistics* (9) *Recursive Estimation* (9) and *Introduction to Machine Learning* (8).

In each of the two semesters of the academic year 2021/22, grades were awarded to MSc CSE students in about 90 scientific lectures and seminars across all the ETH departments.



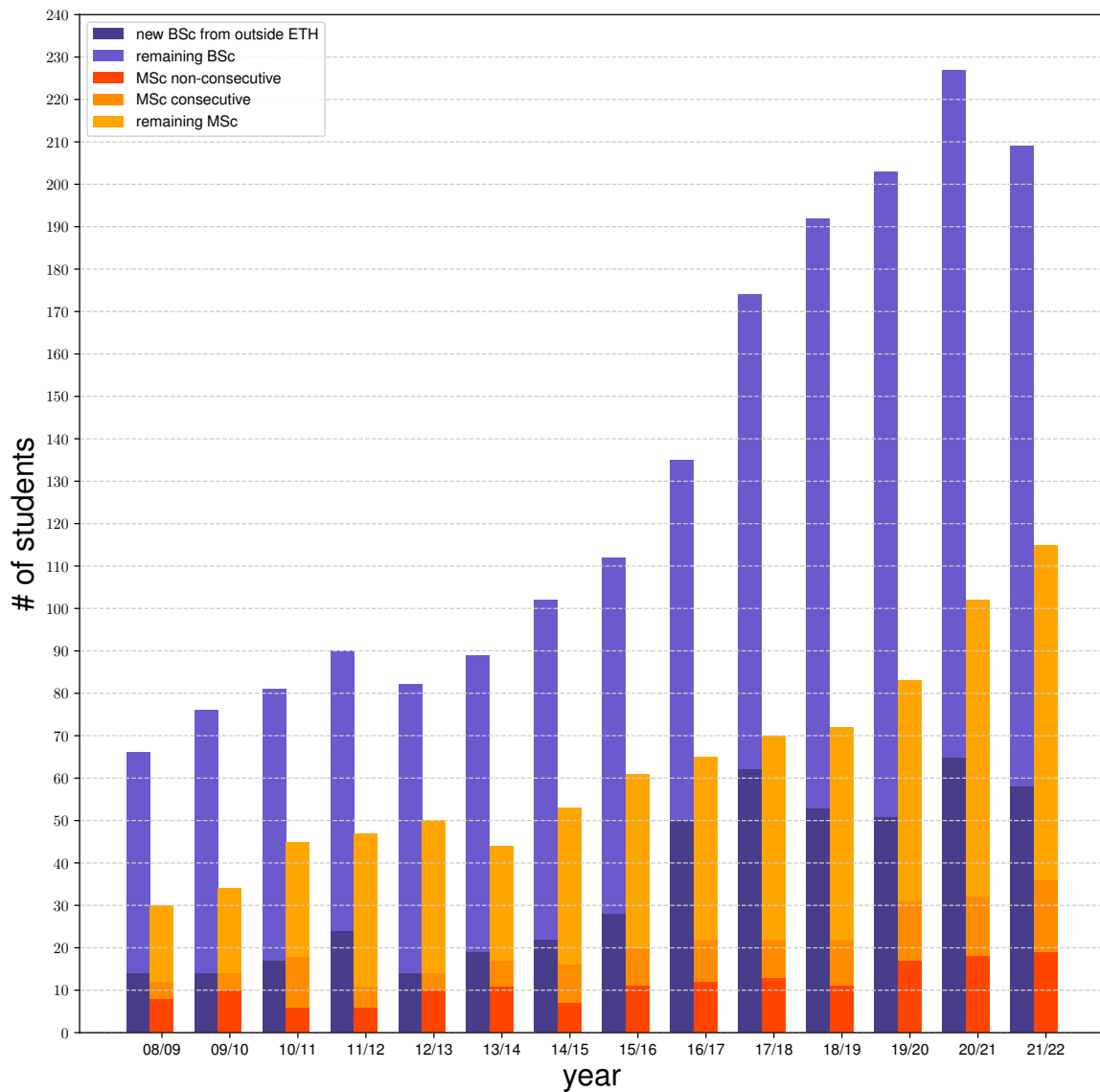






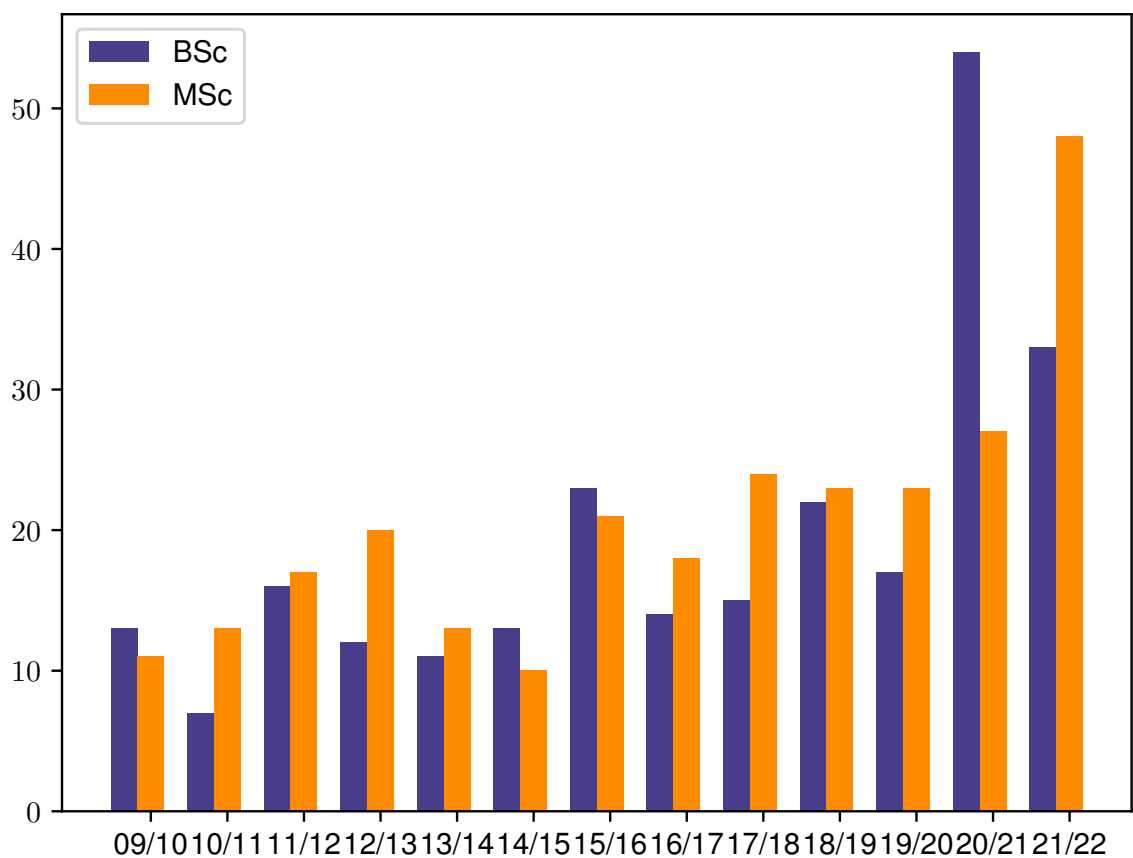
CSE Students and Theses 2

In September 2021, 58 new students started their CSE Bachelor studies in the first semester. From outside CSE 18 students (14 from overseas and 4 from other Swiss Universities) entered the CSE Master curriculum, while 18 BSc CSE students entered the MSc CSE as a consecutive curriculum. The total number of CSE students enrolled in Fall Term 2021 was 324 (headcount): 209 in the BSc program and 115 in the MSc program.

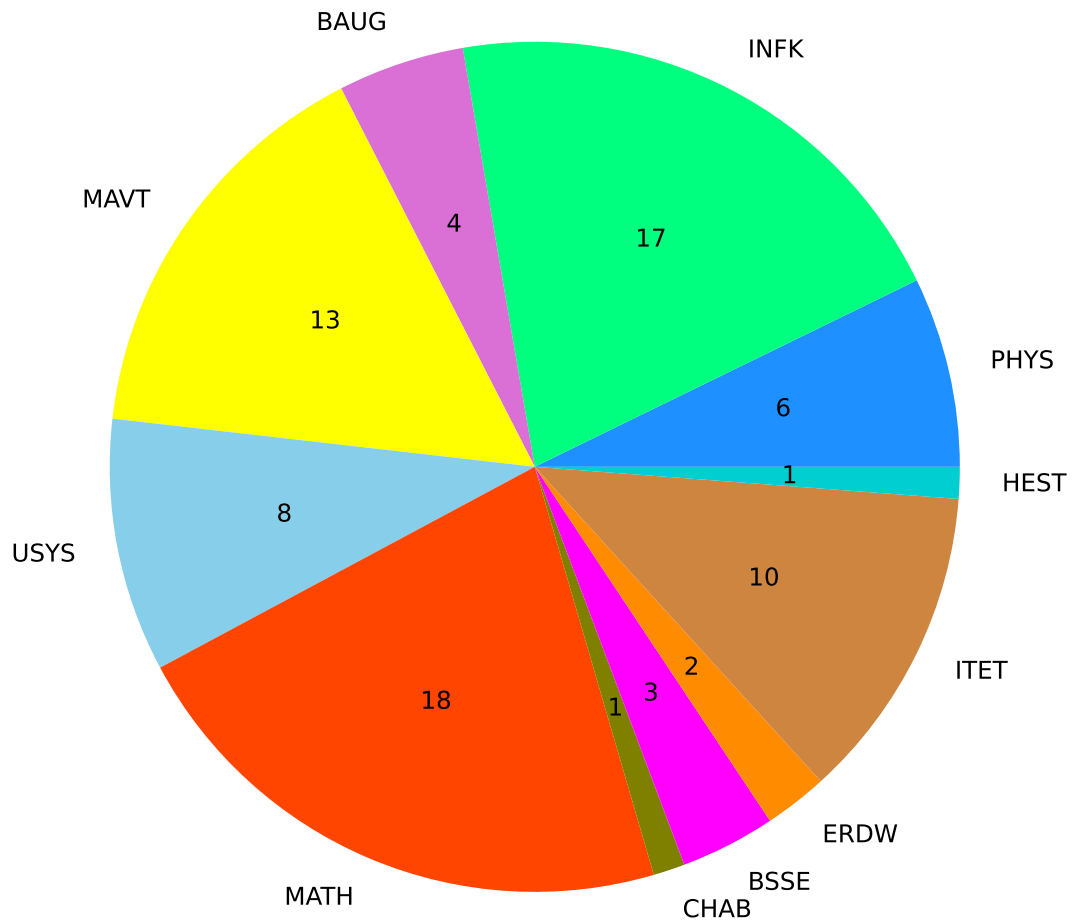


Number of CSE students in the curriculum; dark = number of new students

In the past academic year 81 students have successfully finished a CSE curriculum, 33 Bachelor students and 48 Master students, and have received a CSE degree, some with very good grades. In the following list we give the name of the student, the title of the Bachelor/Master/Term thesis and the name and the department of the advisor. In summer 2022 two MSc CSE students won the **Willi Studer Preis 2022** for the best CSE Master Diploma in the past academic year: Luca Andrea Lavarini and Wouter Rens Tonnon. The MSc Thesis of Wouter Rens Tonnon *A semi-Lagrangian approach to incompressible flow* under the supervision of Prof. Ralf Hiptmair (D-MATH) was distinguished with the **ETH Medal** for an outstanding Master thesis 2022.



Number of CSE graduates



In the academic year 2021-2022 there were written a total of 83 semester, BSc and MSc theses in CSE. The diagram above shows that the supervision of these works is spread over 12 departments of ETH, while some of them seem to attract more students than others. The most popular departments this year were D-MATH with 18 theses, D-INFK with 17 theses and D-MAVT with 13 theses. On the following pages we mention the authoring students, the titles of the theses and the corresponding official supervisors from various departments at ETH.

BSc-Theses

Ryan Sean Ammann

Assessing the Influence of Measurement Errors on the Performance of Neural Networks for the Retrieval of Aerosol Properties from Light Scattering Measurements

(Andreas Adelman, D-PHYS)

Joshua Aurand

Efficient Rendering of Implicit Mesh Representations for Neural Style Transfer

(Markus Gross, D-INFK)

Samuel Bartlett

Uncertainty-driven AI methods for Prognostics and Health management

(Olga Fink, D-BAUG)

Thomas Pascal Baumann

High-Performance Multi-GPU Scheduling and Communication for Data-Centric Applications

(Torsten Hoefler, D-INFK)

Kristof Czirjak

Provis - protein visualisation library in python

(Rainer Krause, D-INFK)

Severin Marc Fritschi

Generation and Simulation of Large-Scale Flow Networks

(Patrick Jenny, D-MAVT)

Katharina Gutmann

Analysis of computational efficiency of aerosol wet deposition in the climate model ECHAM-HAM

(Ulrike Lohmann, D-USYS)

Damian Robin Heer

Visualisation of Wavefunctions in Quantum Mechanics

(Vasile Gradinaru, D-MATH)

Lothar Heimbach

Investigating Adaptive Communication Strategies for Neural Network Training

(Ce Zhang, D-INFK)

Maximilian Robert Herde

Physics-informed Neural Networks for Multiscale Differential Equations

(Siddhartha Mishra, D-MATH)

Raphael Husistein
Improving the Efficiency of Instanton Theory
(Jeremy Richardson, D-CHAB)

Sina Klampt
Simplifying Cloud Microphysical Processes in the Climate Model ECHAM-HAM
(Ulrike Lohmann, D-USYS)

Daria Nadine Lipsky
South American Climate History and Andean Mountain Building Explain the Evolution of Lizard Biodiversity
(Loïc Pellissier, D-USYS)

Johan Lokna
Enhancing Protein Design using BERT
(Ce Zhang, D-INFK)

Florian Meer
Mechanical Modeling of Tissue Deformations in Early Stages of Papillary Bladder Cancer
(Dagmar Iber, D-BSSE)

Pascal Dominic Mueller
Gravitational Wave Detection in Gaussian Noise using Deep Learning
(Lavinia Heisenberg, D-PHYS)

Paul Michael Ochs
Topography Reconstructions of the Phanerozoic Based on Tectonic Data
(Taras Gerya, D-ERDW)

Florian Michel Pauschitz
Inference of Capacity Constraints in Metabolic Networks from Data
(Jörg Stelling, D-BSSE)

Niall Alexander Siegenheim
Decomposition Approaches for Delays in Train Traffic
(Francesco Corman, D-BAUG)

Timofey Shpakov
Bayesian Deep Learning for Flood Detection
(Konrad Schindler, D-BAUG)

Nicolas Elias Stalder

Convolutional filters and pooling in a deep neural network using deep feedback control as the learning method.

(Benjamin Grewe, D-ITET)

David Strassmann

Discontinuous Galerkin Limiters for Nonlinear Conservation Laws in MFEM

(Roger Käppeli, D-MATH)

Marc Constantin Wanner

On solving job-shop scheduling with quantum approximate optimization algorithms

(Jonathan Home, D-PHYS)

MSc-Theses

Andrej Blaser

Metasurface simulation using coupled-mode theory on the example of a metalens
(Jasmin Smajic, D-ITET)

Robert Blass

Automatic Generation of Winter Storm Warnings
(David Bresch, D-USYS)

Matthias Busenhardt

T-PRM: Temporal Probabilistic Roadmap for Path Planning in Dynamic Environments
(Margarita Chli, D-MAVT)

Fabrice Angelo Dal Farra

Design, Simulation and Optimization of Terahertz Plasmonic Modulator Antennas
(Jasmin Smajic, D-ITET)

Philipp Egg

CAD modeling and global registration from indoor LiDAR scans
(Roland Siegwart, D-MAVT)

Daniil Emtsev

Joint end-to-end learning of 2D-3D features to solve the Blind Perspective-n-Point Problem
(Luc Van Gool, D-ITET)

Mark Otto Frey

Learning Sparse-to-Dense Matching for Visual SLAM
(Marc Pollefeys, D-INFK)

Lea Fritschi

Parameter Inference for an Astrocyte Model using Machine Learning Approaches
(Stephan Klaas, D-ITET)

Patrik Simon Hadorn

Shift-DeepONet: Extending Deep Operator Networks for Discontinuous Output Functions
(Siddhartha Mishra, D-MATH)

Angelina Lucy Heusler

Exploring classification methods for default risk assessment within a representative SME sample
(Erich Walter Farkas, D-MATH)

Langwen Huang
Asynchronous and concurrent execution on GPUs using a high-level domain-specific language for weather and climate models
(Christoph Schär, D-USYS)

Nils Knobloch
Uncertainty Quantification for a Hybrid Healthcare Model
(Julia Vogt, D-INFK)

Valerie Kulka
Two-dimensional blood flow simulations in synthetic stenosis using physics informed neural networks
(Sebastian Kozerke, D-ITET)

Philipp Lindenberger
Learning Two-View Geometry from Sparse Correspondences
(Marco Pollefeys, D-INFK)

Anton Maksimov
Hyperbolic Heterogeneous Graph Neural Networks
(Ce Zhang, D-INFK)

Ankur Sanjiv Magdum
On solving optimisation problems in fluid dynamics with deep learning
(Siddhartha Mishra, D-MATH)

Silvia Nauer
An Efficient Boundary-Aware Stream function-Vorticity Fluid Solver with Controllable Viscosity
(Markus Gross, D-INFK)

David Florian Ochsner
Richardson Extrapolation for Hamiltonian Simulation
(Ralf Hiptmair, D-MATH)

Michael Prasthofer
On Machine Learning of Operators Arising in Partial Differential Equations
(Siddhartha Mishra, D-MATH)

Vyacheslav Samokhvalov
GPU-accelerated Poisson solver for the Navier-Stokes equations on an Adaptive Mesh
(Petros Koumoutsakos, D-MAVT)

Leonardo Schwarz
Adaptive brain-like neural networks for control of robotic limbs in brain-inspired hardware

(Indiveri Giacomo, D-ITET)

Patrick Lorenz Schwarz
Ar Assistet Capture of Large Planar Geometries

(Marc Pollefeys, D-INFK)

Mikael Stelio
High-resolution climate modeling: The relevance of the physics-dynamics coupling for the representation of clouds in a kinematic model

(Christoph Schär, D-USYS)

Alexis Sébatien Dominik Stockinger
Multimodal self-supervised attention-based learning for 2D and 3D vision

(Roland Siegwart, D-MAVT)

Wouter Rens Tonnon
A semi-Lagrangian approach to incompressible flow

(Ralf Hiptmair, D-MATH)

Ajaykumar Unagar
Global Path Planning in a Digital-Twin

(Marco Hutter, D-MAVT)

Luohong Wu
Predicting Task-relevant Objects in Egocentric Videos

(Otmar Hilliges, D-INFK)

Tianwei Yu
Asymptotic-Preserving Plasma Model in 3D

(Ralf Hiptmair, D-MATH)

Semester-Theses

Christoph Kwame Aमेvor

Investigations on the Applicability of Physics-Informed Neural Networks to Topology Optimization of Shell Structures

(Dennis Michael Kochmann, D-MAVT)

Noah Andrés Baumann

Using High-Performance Uncertainty Quantification Framework to calibrate Inter-atomic Potentials

(Petros Koumoutsakos, D-MAVT)

Luca Blum

Impact of Box-Cox Transformation on Machine-Learning Algorithms

(Carlo Menon, D-HEST)

Sean Alexander Bone

Optimal design of a HESS for peak shaving BEV fast charging demand at a highway rest stop

(Thomas Justus Schmidt – PSI, D-PHYS)

Matthias Simon Busenhardt

Robotic Colony Building

(Stelian Coros, D-INFK)

Yutong Chao

Filtering in the Wasserstein Space

(Florian Doerfler, D-ITET)

Tiancheng Chen

LPG2vec: Towards learning-enhanced graph databases

(Torsten Höfler, D-INFK)

Han Yao Choong

Differentiable Attention Neural Architecture Search for Single Image Super-Resolution

(Luc Van Gool, D-ITET)

Léonard Equer

Solving Differential Eigenvalue Problems with Deep Learning Techniques

(Siddhartha Mishra, D-MATH)

Mark Frey

Learned 6 Degree of Freedom Object Pose Detection on Mobile Devices

(Marco Hutter, D-MAVT)

Patrik Simon Hadorn

Extending Deep Operator Networks for discontinuous output functions

(Siddhartha Mishra, D-MATH)

Sebastian Heinekamp

Critical Points for Large Scale Quantum Computation in Ion Storage Rings

(Andreas Adelmann, D-PHYS)

Dominik Helmreich

Optimal Pre-training Tasks for sequential neural networks

(Emilio Frazzoli, D-MATH)

Angelina Lucy Heusler

Computational a-posteriori error estimation for uncertainty quantification of eigenvalue problems

(Christoph Schwab, D-MATH)

Lukas Joss

Analysis of computational load imbalance in two global aerosol-climate models

(Ulrike Lohmann, D-USYS)

Wiktor Hoffmann

Informative Path Planning for Wind Prediction with a Fixed-Wing UAV

(Nicholas Lawrance, D-MAVT)

Mirlan Karimov

Event Camera Simulator With Optical Flow Ground Truth

(Davide Scaramuzza, D-MAVT)

Fabian Kistler

Code optimizations for solving earthquake physics and solid-fluid interactions

(Gerya Taras, D-ERDW)

Benjamin Langer

Amplicon windowing for ShoRAH

(Niko Beerenwinkel, D-BSSE)

Ronan Jakob Lindörfer

Spontaneous Speaker Recognition for Conversation Estimation

(Mirko Meboldt, D-MAVT)

Laurens Lueg

Learning Latent Space Dynamics Models from High-Dimensional Data using Distributional Gradient Matching

(Rainer Krause, D-INFK)

Yannick Niedermayr
Implementation of Reduced Edge Subdomain Partitioning in Climate Modeling
(Oliver Fuhrer – Meteo Suisse, D-USYS)

Xiaohe Niu
Human Motion Analysis - Improving Spatio-Temporal Action Detection with Pseudo Pose Features
(Luc Van Gool, D-ITET)

Safira Piasko
Implementation of the Noah Land Surface Model Using a Domain-Specific Language
(Oliver Fuhrer, D-USYS)

Georg Pollak
GPU accelerated next generation approximate Bayesian inference using R-INLA
(Olaf Schenk, D-MATH)

Maxime Raafat
Generative Models of Human Appearance
(Siyu Tang, D-INFK)

Ning Ren
BEM-Based Computation of Forces on Dielectrics
(Ralf Hiptmair, D-MATH)

Vyacheslav Samokhvalov
GPU-accelerated Poisson solver for the Navier-Stokes equations on an Adaptive Mesh
(Petros Koumoutsakos, D-MAVT)

Theo Christoph Smertnig
Three Ways to Solve Partial Differential Equations with Neural Networks Applied to Physics and Finance
(Christoph Schwab, D-MATH)

Daniel Luca Stalder
Hydrodynamical Simulation of Flow instabilities with the Meshless Finite Mass Method
(Lucio Mayer, D-PHYS)

Kalman Szenes
Spectral clustering using a multilevel approach
(Olaf Schenk, D-MATH)

Deifilia To

Parameter tuning of non-differentiable functions in high dimensional input spaces: applied to the blade element momentum method

(Eleni Chatzi, D-BAUG)

Romeo Valentin

Estimating Calibrated Epistemic Uncertainty to enable efficient training data generation with Bayesian Optimization and Deep (Graph) Neural Networks

(Andreas Krause, D-INFK)

CSE Case Studies Seminar 3

The CSE Case Studies Seminar takes place each semester on Thursdays, 16 - 18 hours. Speakers from ETH, from other universities as well as from industry are invited to give a 2×45 minutes talk on an applied topic. The idea is to show the students a case study of an application problem containing the problem setting, the modelling, the mathematical approach and the simulation on a computer. In addition, such a case study should show what is going on in the field of CSE and what are the job perspectives for a CSE engineer. Apart these invited talks, each student has to give a 15 minutes presentation based either on one of the own projects or on a paper which can be proposed by the student or can be taken from a given list of possible interesting papers. In Fall 2021 the CSE Case Studies Seminar was hold in a hybrid mode, while starting from Spring 2022 it was entierly in presence.

The titles of the invited talks during the past academic year are given in the two following lists.

Case Studies Seminar HS21

- 30.09.21 Christian Waldvogel
spherene AG, Zürich
Adaptive Density Minimal Surfaces: Discovery, Discrete Approximation, Application

- 07.10.21 Corentin Perret-Gentil, Philipp Krüsi
Daedalean AG, Zürich
Computer Vision for Aircraft of Today and Tomorrow

- 14.10.21 Robert Katzschmann
Soft Robotics Lab, ETH Zurich
Model-based Control of Soft Robots

- 18.11.21 Daniel Razansky
Biomedical Engineering, ETH Zurich
The Inverse Problem in Optoacoustic Imaging and Tomography

- 25.11.21 Olga Fink
Intelligent Maintenance Systems, ETH Zurich
Fusing Physics-based and Deep Learning Algorithms for Fault Diagnostics and Prognostics

Case Studies Seminar FS22

- 03.03.22 David Sutter
IBM Quantum, IBM Research - Zurich
Quantum Machine Learning
- 10.03.22 Shinichi Sunagawa
Microbiology and Bioinformatics, ETH Zurich
Computational Exploration of Microbial Diversity on Earth
- 07.04.22 Laura De Lorenzis
Numerische Mechanik, D-MAVT, ETH Zurich
Modeling Fracture Phenomena in Solids through the Solution of PDEs
- 05.05.22 Sebastian Schemm, Guillaume Bertoli
Atmosphäre und Klima, D-USYS, ETH Zurich
Recent Challenges and Progress in Modelling Weather and Climate
- 19.05.22 Ulrik Brandes
Soziale Netzwerke, D-GESS, ETH Zurich
Positional Network Analysis

Student Talks in the Case Studies Seminar HS21

1. Paolo Bottoni (2021-10-21)

Paper Nr. 82: Gaze Correction for Home Video Conferencing

2. Xiaohe Niu (2021-10-21)

Own paper: Chunhui Gu, Chen Sun, David A. Ross, Carl Vondrick, Caroline Pantofaru, Yeqing Li, Sudheendra Vijayanarasimhan, George Toderici, Susanna Ricco, Rahul Sukthankar, Cordelia Schmid, Jitendra Malik: AVA: A Video Dataset of Spatio-temporally Localized Atomic Visual Actions, Submitted on 23 May 2017 (v1), last revised 30 April 2018

3. Fabian Lyck (2021-10-21)

Thesis Semester: Point-Line Structure-from-Motion in COLMAP

4. David Strassmann (2021-10-21)

Paper Nr. 64: A New Vectorization Technique for Expression Templates in C++

5. Giacomo Aloisi (2021-10-21)

Thesis Bachelor: OPoly: an OpenMP polyhedral compiler

6. Joshua Aurand (2021-10-21)

Own paper: Ben Mildenhall, Pratul P. Srinivasan, Matthew Tancik, Jonathan T. Barron, Ravi Ramamoorthi, Ren Ng: NeRF: Representing Scenes as Neural Radiance Fields for View Synthesis, ECCV 2020 (oral), 3 Aug 2020

7. Ning Ren (2021-10-21)

Paper Nr. 108: Position based dynamics

8. Levi Lingsch (2021-10-21)

Paper Nr. 39: A cryptographic watermarking technique for multimedia signals

9. Benjamin Langer (2021-10-21)

Paper Nr. 47: Pricing early-exercise and discrete barrier options by fourier-cosine series expansions

10. William Jones (2021-10-21)

Paper Nr. 265: DeepBach: a Steerable Model for Bach Chorales Generation

11. Radenko Tanasic (2021-10-21)

Thesis Semester: Numerical option pricing under the Heston model including stochastic correlation.

12. Bjarne Koelle (2021-10-28)

Paper Nr. 4: A comparative study of some pseudorandom number generators

13. Shengdi Chen (2021-10-28)
Own paper: JATOR, S. N.: Solving Second Order Initial-Value-Problems by a Hybrid Multistep Method without Predictors, Applied Mathematics and Computation: Volume 217, Issue 8, Pages 4036-4046 [2010-12-15]
14. Faveo Hoerold (2021-10-28)
Paper Nr. 262: Time-domain simulation of a guitar: Model and method
15. Pascal Vogel (2021-10-28)
Paper Nr. 188: A comparison of three high-precision quadrature schemes
16. Ciril Humbel (2021-10-28)
Paper Nr. 89: A material point method for snow simulation
17. Veronica Montanaro (2021-10-28)
Paper Nr. 197: A tutorial on fast fourier sampling, IEEE Signal Processing Magazine
18. Merle Backmeyer (2021-10-28)
Thesis Bachelor: Simulation of quasistatic fields with the Darwin formulation
19. Philippe Peter (2021-10-28)
Paper Nr. 187: CutFEM: discretizing geometry and partial differential equations
20. Jonas Luther (2021-10-28)
Paper Nr. 113: Julia: A Fresh Approach to Numerical Computing
21. Samuel Martin (2021-10-28)
Thesis Bachelor: Implementation of Finite Volume Methods in HPX
22. Thomas Baumann (2021-10-28)
Own paper: Alexandros Nikolaos Ziogas, Timo Schneider, Tal Ben-Nun, Alexandru Calotoiu, Tiziano De Matteis, Johannes de Fine Licht, Luca Lavarini, and Torsten Hoefler: Productivity, Portability, Performance: Data-Centric Python, Supercomputing '21: The International Conference for High Performance Computing, Networking, Storage, and Analysis, November 14–19, 2021
23. Pavel Lenskii (2021-10-28)
Paper Nr. 67: A solution algorithm for the fluid dynamic equations based on a stochastic model for molecular motion
24. Sina Klampt (2021-11-04)
Paper Nr. 29: Models change their tune
25. Jonas Gruetter (2021-11-04)
Paper Nr. 55: Line graphs as social networks

26. Jonas Mensch (2021-11-04)
Thesis Bachelor: Climate Effects on Biodiversity: Numerical Modelling
27. Gioele Molinari (2021-11-04)
Own paper: T. Haedrich, D. T. Banuti, W. Palubicki, S. Pirk, D. L. Michels: Fire in Paradise: Mesoscale Simulation of Wildfires, ACM Trans. Graph., Vol. 40, No. 4, Article 163. Publication date: August 2021
28. Lothar Heimbach (2021-11-04)
Paper Nr. 68: Adjoint Tomography of the Southern California Crust
29. Dheeraj Peddinti (2021-11-04)
Paper Nr. 18: Cellular Automation Approach to Pedestrian Dynamics - Theory
30. Luca Wolfart (2021-11-04)
Paper Nr. 17: Simulating dynamical features of escape panic
31. Stanislaw Piasecki (2021-11-04)
Paper Nr. 45: reCAPTCHA: Human-Based Character Recognition via Web Security Measures
32. Michael Vollenweider (2021-11-04)
Paper Nr. 25: Inferring Cellular Networks Using Probabilistic Graphical Models
33. Yilu Chen (2021-11-04)
Paper Nr. 175: Detection, tracking and event localization of jet stream features in 4-D atmospheric data
34. Nicolas Stalder (2021-11-04)
Paper Nr. 23: Evolution in population dynamics
35. Kalman Szenes (2021-11-04)
Paper Nr. 28: Quantification of modeling uncertainties in a large ensemble of climate change simulations
36. Noah Baumann (2021-11-11)
Thesis Semester: Using High-Performance Uncertainty Quantification Framework to calibrate Interatomic Potentials
37. Damian Heer (2021-11-11)
Thesis Bachelor: Visualisation of Wavefunctions in Quantummechanics
38. Ge Cao (2021-11-11)
Own paper: SYUHEI SATO, YOSHINORI DOBASHI, THEODORE KIM: Stream-Guided Smoke Simulations, ACM Trans. Graph., August 2021

39. Francesco La Commare (2021-11-11)
Thesis Bachelor: "Linear Programming model for Oncological patients' appointment scheduling management"
40. Benjamin Krummenacher (2021-11-11)
Paper Nr. 7: Surface Simplification Using Quadric Error Metrics
41. Diego Machain Rivera (2021-11-11)
Paper Nr. 337: Dynamic Locomotion in the MIT Cheetah 3 Through Convex Model-Predictive Control
42. Wiktor Hoffmann (2021-11-11)
Own paper: Fabio Ramos, Lionel Ott: Hilbert maps: Scalable continuous occupancy mapping with stochastic gradient descent, The International Journal of Robotics Research
43. Simon Bolt (2021-11-11)
Paper Nr. 177: A fast SHAKE algorithm to solve distance constraint equations for small molecules in molecular dynamics simulations
44. Deifilia To (2021-11-11)
Own paper: S. Reinhardt, M. Huber, B. Eberhardt, D. Weiskopf: Fully Asynchronous SPH Simulation, Proceedings of the ACM SIGGRAPH / Eurographics Symposium on Computer Animation, 2017
45. Stephanie Maier (2021-11-11)
Paper Nr. 12: Quantum computing in molecular magnets
46. Severin Klapproth (2021-11-11)
Paper Nr. 87: Haptic Quantum Chemistry
47. Manuel Winkler (2021-11-11)
Paper Nr. 157: The FEniCS Project Version 1.5
48. Elisa Hoskovec (2021-12-02)
Paper Nr. 258: Distillation as a Defense to Adversarial Perturbations against Deep Neural Networks
49. Timofey Shpakov (2021-12-02)
Paper Nr. 232: ADAM:A Method for Stochastic Optimization
50. Manuel Schneider (2021-12-02)
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52. Dominik Helmreich (2021-12-02)
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57. Tiancheng Chen (2021-12-02)
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60. Ondrej Cernin (2021-12-09)
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61. Paul Ochs (2021-12-09)
Paper Nr. 24: Evolution Dynamics of Biological Games
62. Zuzanna Herud (2021-12-09)
Paper Nr. 343: Interactive Wood Combustion for Botanical Tree Models

63. Noe Canevascini (2021-12-09)
Paper Nr. 247: BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding
64. Fabiano Sasselli (2021-12-09)
Thesis Bachelor: Stochastic Modeling of Dispersion in Fractured Porous Media
65. Marie-Louise Achart (2021-12-09)
Paper Nr. 307: Forward-mode Differentiation of Maxwell's Equations
66. David Lichtenstein (2021-12-09)
Paper Nr. 137: Reciprocal n-Body Collision Avoidance
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72. Claudio Cannizzaro (2021-12-16)
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73. Francesco Casucci (2021-12-16)
Paper Nr. 156: Online Generation of Collision-Free Trajectories for Quadrotor Flight in Unknown Cluttered Environments
74. Yutong Chao (2021-12-16)
Paper Nr. 100: Stable optimal control applied to a cylindrical robotic arm
75. Mirlan Karimov (2021-12-16)

Thesis Semester: Literature Review on Remote Terrain Sensing for Safe Navigation

76. Rafael Steiner (2021-12-16)

Paper Nr. 259: Chance-Constrained Optimal Altitude Control of a Rocket

77. Yining Li (2021-12-16)

Paper Nr. 66: Reverse Engineering Financial Markets with Majority and Minority Games Using Genetic Algorithms

78. Christoph Groetzbach (2021-12-16)

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79. Sean Bone (2021-12-16)

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1. Ning Ren (2022-03-17)

Thesis Semester: BEM-Based Computation of Forces on Dielectrics

2. Vihang Puranik (2022-03-17)

Paper Nr. 90: Shape optimization of continua using NURBS as basis functions

3. Yining Li (2022-03-17)

Paper Nr. 91: A Computational Approach to Financial Option Pricing Using Quasi Monte Carlo Methods via Variance Reduction Techniques

4. Maximilian Herde (2022-03-17)

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6. David Strassmann (2022-03-17)

Paper Nr. 183: Implicit-explicit Runge-Kutta methods for time-dependent partial differential equations

7. Merle Backmeyer (2022-03-17)

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8. Thomas Baumann (2022-03-17)

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16. Pascal Vogel (2022-03-24)

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17. Michal Sudwoj (2022-03-24)

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20. Shengdi Chen (2022-03-31)

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22. Dheeraj Peddinti (2022-03-31)
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23. Marc Wanner (2022-03-31)
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24. Mingfei Lyu (2022-03-31)
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25. Deifilia To (2022-03-31)
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26. Marianna Marzetta (2022-03-31)
Paper Nr. 65: Red blood cell distribution in simplified capillary networks
27. Tiancheng Chen (2022-04-14)
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28. Han Yao Choong (2022-04-14)
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29. Tobia Simmler (2022-04-14)
Paper Nr. 81: Automatic player behavior analysis system using trajectory data in a massive multiplayer online game
30. Stanislaw Piasecki (2022-04-14)
Paper Nr. 16: Metapopulation dynamics of bubonic plague
31. Nicholas Engel (2022-04-14)
Paper Nr. 101: The effect of stepping on pedestrian trajectories
32. Raphael Husistein (2022-04-14)
Paper Nr. 40: Onion-like Network Topology Enhances Robustness against Malicious Attacks
33. Alain Huegli (2022-04-14)
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35. Rafael Steiner (2022-04-28)
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36. Christoph Groetzbach (2022-04-28)
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37. Paolo Bottoni (2022-04-28)
Paper Nr. 303: A Comparison of Line Extraction Algorithms using 2D Laser Rangefinder for Indoor Mobile Robotics
38. Diego Machain Rivera (2022-04-28)
Paper Nr. 327: 3D Dynamic Scene Graphs: Actionable Spatial Perception with Places, Objects, and Humans
39. Roman Svoboda (2022-04-28)
Paper Nr. 33: A fast triangle to triangle intersection test for collision detection
40. Alice Mazzoleni (2022-04-28)
Paper Nr. 62: Generalized Biped Walking Control
41. Katharina Gutmann (2022-04-28)
Paper Nr. 149: An adaptive optical flow technique for person tracking systems
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Paper Nr. 277: A multi-level optimization framework for simultaneous grasping and motion planning
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45. Jonas Gruetter (2022-05-12)
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48. Benjamin Krummenacher (2022-05-12)

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49. Junpeng Gao (2022-05-12)

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56. Tobias Sugandi (2022-06-02)

Paper Nr. 76: A numerical method for the computation of compressible flows with low Mach number regions

57. Severin Fritschi (2022-06-02)

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58. Levi Lingsch (2022-06-02)

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59. Zuzanna Herud (2022-06-02)

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60. Jonas Luther (2022-06-02)

Paper Nr. 72: SPH based Shallow Water Simulation

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ETH Zurich
Rämistrasse 101
8092 Zurich

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