Momčilo Mrkaić

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EXPERIENCE

City University of Hong Kong   **June 2023 – February 2024**
Undergraduate Researcher   *Hong Kong*
- Designed algorithms to compute optimal solutions for facility location problem with capacities and ordinal preferences

Microsoft   **July 2022 – October 2022**
Machine Learning Intern, Mixed Reality Team   *Belgrade , Serbia*
- Optimized the 3D reconstruction deep learning multi GPU cloud-based training pipeline in PyTorch Lightning, used for holographic live stream generation, reducing compute time by 40%
- Adapted open source, deep learning, monocular 3D reconstruction PyTorch model to different domain dataset, with different data and cameras, and enabled multi GPU training on Azure ML

Science and Engineering Center PFE   **February 2022 – Present**
Junior Associate   *Serbia*
- **Teaching assistant:** Holding lectures for high school students on PFE camps in programming, mathematics, image processing, and machine learning
- **Student mentor:** Offering guidance and supervising student projects

City University of Hong Kong   **January 2022 – May 2022**
Research Assistant   *Hong kong*
- Managed and generated dataset for image harmonization problem
- Demonstrated expertise in setting up and maintaining Linux server for seamless operations

EDUCATION

City University of Hong Kong   **August 2021 - May 2025**
BSC, Computer Science   *Hong Kong*
- Dean's list; First class; 3.98 CGPA
- Minor in mathematics
- Relevant courses: Computer Networks, Operating Systems, Database Systems, Software Design, Web Development, Data Structures, Data Science, Computer Organization, Cybersecurity, Computer Graphics

Mathematical Grammar School   **September 2015 - June 2021**
High School Diploma   *Belgrade, Serbia*
- Honors mentored class
- Attended special math-oriented middle school program (2015 - 2017)

PROJECTS

- **Actor-critic reinforcement learning bot**: Devised an actor-critic reinforcement learning algorithm for solving Open AI gym MuJoCo environments with continuous action space [PSIML, 2022]
- **Stock price prediction:** Designed 5 different machine learning and time series models (CNN, LSTM, CNN+LSTM, LSTM+Time2Vec, ARIMA) to forecast stock prices based on historical data of close value. The project was done as a high school final year paper and it is displayed on the high school's website as one of the

best final year papers [Petnica Science Center and Mathematical Grammar School, 2021]
- **GeoGebra in C#:** Developed GUI application in C#, intended to assist in solving geometry problems (e.g. draw lines, circles, find intersections, do isometric transformations) [Mathematical Grammar School, 2020]
- **Image denoising using autoencoders:** Engineered an autoencoder network without ML libraries for image denoising and compared it with conventional methods, Gaussian and median filters [Petnica Science Center, 2019]
- **Ball and beam:** Created PID controller for ball and beam system with camera as position sensor [Petnica Science Center, 2019]
- **Calculating math expressions from image:** Deployed a computer vision system to detect digits and symbols, recognize them, and calculate math expressions from images [Belgrade Science Fair, 2018]

HONORS & AWARDS

- **Hackathons**: 3rd place on EESTech Machine Learning Challenge 2022, 3rd place on CityHack 2022
- **Competitions:** participated in East Asia ICPC (2022), participated in the Serbian Olympiad in Informatics (2020), Junior Serbian Mathematics Olympiad (2017), Junior Serbian Olympiad in Informatics (2017), and in 6 national mathematics, physics, and informatics competitions
- **Scholarships:** HKSAR Government Scholarship, Scholarship for exceptionally talented students (Government of Serbia, Ministry of Education), Top Scholarship (City University of Hong Kong)

EXTRACURRICULAR ACTIVITIES

- **Computer Science Week:** organizer and lecturer (2022-present)
  Organized 7th and 8th CS Week, a week-long series of lectures and workshops at Mathematical Grammar School, spanning a wide range of areas in computer science
- **G Research Spring into Quant Finance:** attendee (2024)
- **Serbian Academy of Sciences and Arts, Student Seminar:** lecturer (2023)
- **Practical Seminar in Machine Learning, PSIML:** attendee (2022)
- **EEML Serbian Machine Learning Workshop:** attendee (2022)
- **Petnica Science Center, Department of Applied Physics and Electronics:** attendee (2019 - 2021)
  Attended 5 seminars and workshops on the subjects of electronics, robotics, control systems, computer vision, and machine learning.
- **Applied Physics and Electronics club in Mathematical Grammar School:** associate (2019 - 2021)
  Mentored student projects, held lectures, and organized the club's participation and its displays at multiple science festivals

SKILLS

- **Programming languages:** Python, C, C++, C#, Java, SQL, JavaScript, HTML/CSS, MATLAB, Assembly
- **Technologies:** PyTorch, TensorFlow, Pandas, Git, Linux, .NET, Docker, Vim, JUnit
- **Languages:** English (C1 advanced), Serbian (Native), Italian (Basic)