

Mario Bijelic *Curriculum Vitae*

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languages

german: mother tongue

croatian: mother tongue

english: Proficient

latin: Latinum

programming

♥ Python

C++, Matlab, ROS,

TensorFlow,

L^AT_EX

interests

professional:

☺ Computer Vision

Data Science

Deep Learning

Solid State Physics

Quantum Physics

Statistical Physics

Sensing Technologies

personal:

☺ cycling, hiking

☺ roadtrips

education

- 2014–2016 **M.Sc. Physics (120CP + 20CP)** Goethe University Frankfurt, Germany
Application of Mean Field and Variational Monte Carlo Methods to charge structures in hexagonal lattices. [Thesis grade: 1.0]
A novel insight within the Hubbard model was given. Using two state of the art methods it was shown that the second nearest neighbour Coulomb Repulsion is not able to create quantum Spin Hall States. Furthermore the emergence of interesting complex charge ordered phases was proven.
Minor: Mathematics 20CP additional to main studies
Passed with distinction: 1.0
- 2014–2015 **M.Sc. Physics** University of Gothenburg, Sweden
Exchange semester at the University of Gothenburg with focus on Neural Networks, Quantum Informatics and Fuel Cells.
- 2011–2014 **B.Sc. Physics (180CP + 60CP)** Goethe University Frankfurt, Germany
Density Functional Theory applied to charge transport in solar cells [Thesis grade: 1.0]
The electronic structure was calculated for Si, ZnO and GaAs by applying the Density Functional Theory. Based on these results Optical Properties for Reflectance and Absorption were calculated. Those results were used to solve the Boltzmann Transport Equations for charge transport and to calculate for each type the theoretically maximum possible solar cell efficiency.
Minor: Economics 60CP additional to main studies
Passed with: 1.2
- 2011 **Abitur** Max Beckmann Schule Frankfurt, Germany
General qualification for University entrance
Additionally participated and succeeded at Jugend Forscht (a nation wide competition across Germany for young researchers with self imposed topics). The research project was to implement organic solar cells without the use of clean room techniques. Efficiencies up to 10% for short periods of time were achieved by reversing the effect of OLED's.
Major: Mathematics and Physics
Passed with: 1.4

experience

Full Time

2016–Now **Daimler AG** Ulm, Germany
3rd Year PhD Student in Multi Sensor Fusion for Enhanced Environment Perception
Since October 2016 working as a PhD Student within the public funded project **DENSE**, which is an abbreviation for **aD**verse **wE**ather **eN**vironmental **S**ensing syst**Em**.

The work is realised in joint cooperation with my doctoral adviser Prof. Klaus Dietmayer at the University of Ulm within the "Pattern Recognition and Cameras" team at Daimler's research institute in Ulm. The main goal is to use advanced deep learning techniques to create robust and noise sensitive deep neuronal networks detecting different road users in challenging adverse weather conditions.

Therefore we also introduced new automotive sensors in the short wave infrared region to the market. It is expected that light above 1400nm has the advantage to penetrate adverse weather conditions better and to enable higher intensities while keeping eye safety due to longer wavelengths.

Hence the second task is the sensor integration to a test vehicle and data acquisition during adverse weather conditions with established and new sensors, as well as a real time capable demonstration.

Part Time

2013–2016 **Goethe University** Frankfurt, Germany
Teaching Assistant
Teaching Assistant for various lectures covering theoretical electrodynamics, theoretical quantum physics, optics and medical physics.

2010 **Hessian Parliament** Wiesbaden, Germany
Getting insights and experiences during a month long student internship at Hessian's federal state parliament.

awards

2012-2014 **Scholarship** Goethe University, Frankfurt
Deutschland Stipendium

2011 **Jugend Forscht** Kiel, Germany
Award for future technologies "Zukunftstechnologiepreis" (1500€) received by the Minister of research and education Prof. Dr. Annette Schavan.
Award for sustainable development (1000€) received by the fund of the chemical industry.
5th Place in chemistry at the 46. German Jugend Forscht nation wide competition (250€) received by the fund of the chemical industry.

2011 **Jugend Forscht** Darmstadt, Germany
Best interdisciplinary work at the federal Hessian Jugend Forscht competition and qualification to the nation wide competition.

publications

- 11/2019 **PrePrint** ArXive
Seeing Trough Fog Without Seeing Fog: Deep Multimodal Sensor Fusion in Unseen Adverse Weather
- 06/2019 **Conference** CVPR: Vision for All Seasons: Bad Weather and Nighttime
Recovering the Unseen: Benchmarking the Generalization of Enhancement Methods to Real World Data in Heavy Fog
- 11/2018 **Conference** The 2018 21th IEEE International Conference on Intel. Transportation Systems
Robustness Against Unkown Noise for Raw Data Fusing Neural Networks
- 06/2018 **Conference** The 2018 29th IEEE Intelligent Vehicles Symposium
Benchmarking Image Sensors Under Adverse Weather Conditions for Autonomous Driving
- 06/2018 **Conference** The 2018 29th IEEE Intelligent Vehicles Symposium
A Benchmark for Lidar Sensors in Fog: Is Detection Breaking Down?
- 03/2018 **Journal** Physical Review B
Suppression of topological Mott-Hubbard phases by multiple charge orders in the honeycomb extended Hubbard model
- 03/2016 **Poster** International SFB summerschool Bad Endorf, Germany
SFB/TR 49 International School on Thermal, Quantum, and Topological Phase Transitions
Variational Monte Carlo Methods and application to charge order

co-authored publications

- 11/2019 **Conference** ICCV
Gated2Depth: Real-time Dense Lidar from Gated Images
- 09/2019 **Conference** 3dv
Pixel-Accurate Depth Evaluation in Realistic Driving Scenarios
- 01/2019 **Journal** Electronic Components and Systems for Automotive Applications
DENSE: Environment Perception in Bad Weather—First Results