

EDUCATION

NOTRE DAME, IN JUL 2018 – PRESENT	University of Notre Dame du Lac <i>Doctor of Philosophy Computer Science and Engineering</i> Doctoral Advisor Dr Siddharth Joshi
LONDON, UK SEP 2016 – AUG 2017	University College London <i>Master of Science Computational Finance</i> Graduated with Distinction
INGOLSTADT, DE OCT 2013 – AUG 2016	Catholic University of Eichstätt-Ingolstadt <i>Bachelor of Science Business Administration with a Specialisation in Economics</i> Graduated ranked 2 nd

PROFESSIONAL EXPERIENCE

NOTRE DAME, IN JUN 2019 – PRESENT	University of Notre Dame du Lac <i>Graduate Research Assistant, Department of Computer Science and Engineering</i> <ul style="list-style-type: none">• Researching and developing low-power event-based machine learning algorithms, amongst other for computer vision and object recognition, by advancing machine learning algorithms with findings from neuroscience (such as neural dynamics) and making them biologically plausible.• Investigating the tradeoff between energy and accuracy of efficient quantized spiking neural networks which can be implemented in digital accelerators with different weight storage methods, resulting in an ISCAS conference paper.• Analyzing quantization for convolutional spiking neural networks trained with local learning, demonstrating $\approx 73\%$ memory savings at the cost of $\approx 1\%$ accuracy, results subsequently published and presented at ICONS.• Collaborating with researchers from the department of electrical engineering and simulating spiking neural networks with neurons based on properties from FerroFET devices, culminating in a joint journal paper.
NOTRE DAME, IN SEP 2018 – MAY 2019	University of Notre Dame du Lac <i>Graduate Teaching Assistant, Department of Computer Science and Engineering</i> <ul style="list-style-type: none">• Fall semester for “Introduction to Computing C/C++ Programming” and in the spring semester for “Elements of Computing 2”.• Coordinating undergrad TAs, grading assignments, projects and exams on time, holding office hours to counsel students and lecturing when the instructor was absent.
FRANKFURT, DE MAR 2018 – JUL 2018	Ernst & Young GmbH <i>Quant Team/Data Scientist, Financial Accounting Advisory Services</i> <ul style="list-style-type: none">• Performing benchmark analysis for various financial instruments (e.g. equities, bonds, foreign exchange instruments and futures). Investigating price deviations and anomalies along with visualizing the deviations on a portfolio level and communicating the results with international teams.• Developing a tool to aid the data handling for equity, bond and forward pricing using technologies such as Python3, Flask and SQLite.• Carrying out large scale bond price deviation analysis to characterize deviations. Training various machine learning models such as ridge regression, support vector regression and regression trees using python-based libraries, e.g. scikit-learn, NumPy, pandas, matplotlib.
FRANKFURT, DE JUL 2015 – OCT 2015	Deutsche Bank AG <i>Summer Internship Program, Product Management Real Assets</i> <ul style="list-style-type: none">• Supporting the risk classification of new alternative capital markets products, including programming the maximum drawdown model in Excel with Visual Basic for Applications.• Analyzing the performance of the product portfolio, e.g. evaluating dividend payouts and net asset value.

PUBLICATIONS

- **Clemens JS Schaefer**, Siddharth Joshi, “Quantizing Spiking Neural Networks with Integers”, International Conference on Neuromorphic Systems (ICONS), 2020
- **Clemens JS Schaefer**, Patrick Faley, Emre Neftci, Siddharth Joshi, “Memory Organization for Energy Efficient Learning and Inference in Digital Neuromorphic Accelerators”, IEEE International Symposium on Circuits and Systems (ISCAS), 2020
- Sourav Dutta, **Clemens JS Schaefer**, Jorge Tomas Gomez, Siddharth Joshi, Suman Datta, “Supervised Learning in All FeFET-Based Spiking Neural Network: Opportunities and Challenges”, Frontiers in Neuroscience, 2020
- **Clemens JS Schaefer**, Siddharth Joshi, “Memory Organization and Structures for On-Chip Learning in Spiking Neural Networks”, IEEE 63rd International Midwest Symposium on Circuits and Systems (MWSCAS), 2020

FELLOWSHIP AND SERVICE

AUG 2020 – SEP 2020	Telluride Neuromorphic Cognition Engineering Workshop , Participant <ul style="list-style-type: none">• Working on the meta-learning challenge (learning with limited data) by applying few-shot learning principals to convolutional spiking neural networks.• Developed proof-of-concept for spiking few-shot learning with self-supervision to learn semantically meaningful features.
JUL 2020	Design Automation Conference (DAC) , Young Student Fellow <ul style="list-style-type: none">• Selected as a Young Student Fellow to attend the conference on a stipend and enjoy additional training and networking opportunities, as well as a chance to present my current research to the community.• Winning the DAC Young Fellows Research Video Award.
OCT 2013 – AUG 2017	Friedrich-Naumann-Foundation for Liberty , Fellowship Holder <ul style="list-style-type: none">• Competitive scholarship with the goal to promote liberal principles such as freedom and dignity for all people in all areas of society, both in Germany and abroad.• The scholarship encompassed the participation of various seminars with topics ranging from economics to philosophy, study support of approx. 15,000 USD over four years as well as financial support for my semester abroad at the Pontificia Universidad Javeriana in Cali, Colombia (2016) and tuition fee subsidies for my master studies at UCL.
JUN 2014 – JUN 2015	Catholic University Eichstätt-Ingolstadt , Student Representative <ul style="list-style-type: none">• Representing the students of the business school in a team of six in various committees ranging from faculty level up to university level.• Organizing the welcome week for the freshman to integrate them quickly into the student community and facilitating the start of their studies. Holding office hours to consult students during the semester.• Voicing student concerns and inputs with regards to teaching and research conducted at the business school.
NOV 2014 – APR 2015	German Academic Exchange Service , Fellowship Holder <ul style="list-style-type: none">• Fellowship for a semester abroad at the University of Madras in Chennai, India by the largest German support organisation in the field of international academic cooperation.• Financing flights, insurances, and living cost to aide my academic studies as well as extracurricular cultural experiences in India.
AUG 2014 – SEP 2014	Kolping Youth , Social Ecological Workcamp <ul style="list-style-type: none">• Voluntary workcamp at a family-run eco-tourism project “Finca Verde” in the rural community of Bijagua, Costa Rica.• Helping with basic constructions at the Finca to facilitate eco-tourism as well as interacting with the local community by visiting schools and regional events.

TECHNICAL SKILLS

Programming Languages: Python, PyTorch, TensorFlow, Matlab, C++, R, \LaTeX

Languages: German (native), English (business fluent, TOEFL iBT 112), Spanish (basics)