

Kunal Ghosh

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EDUCATION

- **Machine Learning Summer School**
Madrid, Aug 2018.
- **Master's in Computer Science**
Major: Machine Learning and Data Mining
Minor: Mathematics
Aalto University, Helsinki, Finland
GPA - 4.63/5
Graduated (with Honours) Nov 2017
- **Bachelor's in Computer Science**
Visvesvaraya Technological University
Grad May 2011 | Bangalore, India

COURSEWORK

MASTER'S

- Deep Learning
- Gaussian Processes
- Reinforcement Learning
- Kernel Methods
- ML Advanced probabilistic methods
- Bayesian Data Analysis
- Algorithmic Methods of Data Mining
- Convex Optimization
- Computational Science
- Programming Parallel Computers

TEACHING

- Aalto University course on *Deep Learning*
- 2019 - TA (~450 students, responsible for assignment on Unsupervised Learning)
 - 2018 - TA (~250 students)
 - 2017 - TA (~250 students)
 - 2016 - Main TA *Seminar course* (~40 students)

SKILLS

Good with:

- Python (Including PyTorch, Numpy, Scipy, SciKit Learn and working knowledge of Theano and Tensorflow)
- Matlab & Octave
- Apache Spark

Some knowledge of:

- C
- C++ (Cuda & OpenMP)
- Stan (Probabilistic Programming)
- SQL
- Shell Scripting
- Java
- L^AT_EX
- Apache Lucene

WORK EXPERIENCE

AALTO UNIVERSITY | Doctoral Candidate

June 2018 - now | Espoo, Finland

- Working on generative models for discrete structures with applications in materials science. Supervised by Prof. Patrick Rinke (Dept. of Applied Physics) and Prof. Aki Vehtari (Dept. Computer Science)

AALTO UNIVERSITY | Research Assistant - Honours Program

May 2016 - August 2017 | Espoo, Finland

- Developed deep learning models to predict molecular electronic properties. Supervised by Prof. Vehtari (Dept. Computer Science) and advised by Prof. Patrick Rinke (Dept. Applied Physics).
- Studied semi-supervised extensions of the Variational Auto-Encoder and related models. Supervised by Prof. Tapani Raiko, Prof. Aki Vehtari and advised by Dr. Jyri Kivinen.

AMAZON | Software Development Engineering in Test

Dec 2013 - Aug 2015 | Bangalore, India

AMAZON | Quality Assurance Engineer

Aug 2011 - Nov 2013 | Bangalore, India

OWNCLOUD.ORG | Google Summer of Code Intern

May 2011 - Aug 2011

THESIS & PUBLICATIONS

- **Kunal Ghosh**, Annika Stuke, Milica Todorović, Peter Bjørn Jørgensen, Mikkel N. Schmidt, Aki Vehtari and Patrick Rinke. *Deep learning spectroscopy: neural networks for molecular excitation spectra*, Wiley Advanced Science, 2019. [Link](#)
- Annika Stuke, Milica Todorović, Matthias Rupp, Christian Kunkel, **Kunal Ghosh**, Lauri Himanen, Patrick Rinke *Chemical diversity in molecular orbital energy predictions with kernel ridge regression*, Submitted, 2019. [Link](#)
- Annika Stuke, Milica Todorović, **Kunal Ghosh**, Aki Vehtari and Patrick Rinke. *Spectral property prediction with artificial neural networks*, Abstract published in Deutsche Physikalische Gesellschaft e.V. 2017, [Link](#)
- *Deep Learning for Predicting Molecular Electronic Properties.*, Master's Thesis, Aalto University, 2017, [Link](#)

AWARDS

- 2018 **Travel Grant** (1000 €) from the Education Network in Condensed Matter and Materials Physics, Dept. of Applied Physics, Aalto University.
- 2016 Inducted into the Machine Learning **Honours Program** at Aalto University. Awarded for maintaining good progress in studies (completed 63 ECTS out of 90 in the 1st year) while maintaining good grades (4.55 out of 5)
- 2014 2nd/100 teams. Amazon Internal Machine Learning Contest.
- 2013 **99.5 percentile** in GATE 2013. 1019th/224160 candidates.
- 2004 29th/~2x10⁵ candidates. National Talent Search Scholarship. State Level.