

# Puneeth Kouloorkar

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## EDUCATION

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**Master of Science**, Computational Sciences Oct 2019 - Present  
Freie Universität Berlin, Berlin, Germany GPA: 2.2/4.0  
*Research Area:* Computer Vision & Molecular Sciences Advisor: Prof. Dr. Peter Koltai

**Bachelor of Engineering**, Mechanical Engineering Aug 2013 - Jun 2017  
Visvesvaraya Technological University, Karnataka, India GPA: 8.45/10

## EXPERIENCE

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**Federal Metrology Institute** Berlin, DE  
*Master Thesis* Sep 2021 - Apr 2022

- Proposed a viable mathematical model to generate the training data that replicates the real interferometer data by superposing the noise on algorithmically simulated data
- Achieved at least 10x improvement in denoising simulated data by a seven-layer CNN architecture
- Presented an innovative method to quantify the real interferometer data denoising due to lack of availability of the ground-truth data
- Implemented RESTful microservice mesh by containerizing the trained model in Docker and deploying the end-to-end pipeline in AWS cloud using Kubernetes

**Federal Metrology Institute** Berlin, DE  
*Deep Learning Research Assistant* Mar 2021 - Sep 2021

- Conducted extensive hyperparameter optimization including suitable data augmentation search, evaluation metrics and loss function robustness
- Adapted the explainability methods to the regression task at hand to reason the models' predictions

**Freie Universität Berlin** Berlin, DE  
*Machine Learning Research Assistant* Jan 2021 - May 2021

- Simulated the entire dataset of 375000 three-dimensional protein conformations
- Created an end-to-end pipeline to precondition the protein, simulate the dataset, and cluster the dataset
- Reported detailed analysis plots to identify the most-probable conformation of the protein

**Borkar Bound** Bengaluru, India  
*Co-founder* Nov 2017 - Aug 2019

- Expanded company's operations to new domains including branding and marketing
- Served as the creative head and directed the UI/UX design team of 4
- Fully equipped company's website with an e-commerce store within a turnaround time of 2 weeks
- Raised sales revenue of wall posters by 30% by introducing custom design and glass picture frames

## SKILLS

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- **Languages:** Python, C++, MATLAB
- **Libraries/Frameworks:** PyTorch, OpenCV, Scikit-learn, Pandas, Flask, Git, Docker, Kubernetes
- **Technical:** AWS, A/B testing, CI/CD, Statistics, NLP, Image processing, Data analysis

## PROJECTS

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- **Satellite Image Object Classification:** Classification of land cover objects (tree row, water, etc.) in Sentinel-2 satellite images
- **How to predict epidemics:** Finding the critical point of percolation theory beyond which epidemics occur
- **Explainability methods of Deep learning:** PyTorch implementation of Sensitivity Analysis and Layer-wise Relevant Propagation methods