Anshuk Uppal
AI Researcher | Deep Learning & Generative Models

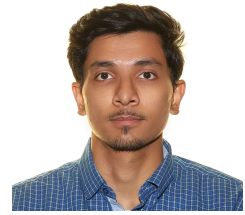✉ ansup@dtu.dk 📞 +44 7404421205
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Professional Summary

PhD candidate in Machine Learning with 4+ years of research experience in deep generative models, uncertainty quantification, and Bayesian inference. Proven track record of publishing at top-tier venues (NeurIPS, ICML) and delivering impactful research across academia and industry. Currently developing novel techniques in diffusion models and continuous normalizing flows with applications to computer vision and life sciences data.

Education

PhD in Computer Science *2021 - Present*
Technical University of Denmark Copenhagen, Denmark

- **Focus**: Uncertainty and Robustness in Deep Learning
- **Advisors**: Prof. Wouter Boomsma (DIKU), Prof. Jes Frellsen (DTU)
- **Funding**: Center for Basic Machine Learning Research in Life Sciences (MLLS)

Master of Technology in Electronics & Communication *2020*
IIIT Bangalore India

- **CGPA**: 3.3/4.0
- **Thesis**: Multimodal Posterior Estimation in Bayesian Neural Networks using Natural Gradients

Research Experience

Research Scientist Intern *June 2025 - October 2025*
Microsoft Research Reading, UK

- Working with SOTA text-to-image generative models like Stable Diffusion 3 and FLUX.
- Collaborating with the Applied Sciences Group on cutting-edge computer vision applications, specifically in image editing.

Research Scientist Intern *June 2024 - October 2024*
Sony AI Tokyo, Japan

- Led research on disentanglement and controllable generation in novel non-linear Latent Diffusion Models.
- Leveraged knowledge of classical approaches like β-VAEs and GANs to come up with an alternative to classifier-free guidance.
- **Output**: Manuscript under peer review with preprint available

Visiting Research Scholar *October 2024 - March 2025*
New York University New York, USA

- Extended research collaboration with Prof. Rajesh Ranganath's group at CILVR and the Courant Institute.
- Advanced research on improving sampling diversity in pretrained conditional diffusion models, specifically Stable Diffusion (text to image).
- Collaborated on discovering better training strategies for continuous normalising flows and consistency models for faster sampling.
- **Output**: Preprint will be released soon.

Research Scientist Intern *June 2019 - December 2019*
RIKEN-AIP Tokyo, Japan

- Scaled Natural Gradient Variational Inference for mixture of exponential family approximations
- Developed techniques for approximating Deep Neural Networks with Gaussian Processes
- Implemented Bayesian Neural Network pruning using learned posterior approximations

Key Publications

Implicit Variational Inference for High-Dimensional Posteriors (NeurIPS 2023 Spotlight)
A. Uppal, K. Stensbo-Smidt, W. Boomsma & J. Frellsen
Spotlight presentation at top-tier ML conference (acceptance rate <3%)

Bounded Implicit Variational Inference (ICML 2022 Workshop)
A. Uppal, W. Boomsma & J. Frellsen
Presented at premier machine learning conference workshop

Denoising Multi-Beta VAE: Representation Learning for Disentanglement and Generation (Under Review)
A. Uppal, Y. Takida, C-H. Lai & Y. Mitsufuji

Technical Skills

Programming	Python, C, BASH
ML Frameworks	PyTorch, JAX, Pyro, NumPyro
Specializations	Deep Generative Models (Diffusion Models, VAEs, GANs, Normalizing Flows)
	Bayesian Deep Learning & Uncertainty Quantification
	Natural Gradients & Higher-Order Optimization
	Computer Vision & Video Generation

Awards & Grants

- **Otto Mønsteds Travel Grant** - NeurIPS 2023
- **Otto Mønsteds External Visit Grant** - October 2024 to April 2025
- **Thomas B Thriges External Visit Grant** - October 2024 to April 2025
- **William DeMant External Visit Grant** - October 2025 to April 2025

Teaching & Mentoring

Teaching Assistant | *Technical University of Denmark*

- Deep Learning (02456) - Fall 2022, Fall 2023
- Deep Learning for Industry (Special Course) - December 2021

Organizer | *Generative Modelling Summer School* | Copenhagen 2023
Teaching support and event organization for international summer school

Research Interests

- **Deep Generative Modeling**: Diffusion models, continuous normalizing flows, stochastic interpolants
- **Uncertainty Quantification**: Bayesian neural networks, variational inference, robustness
- **Optimization**: Natural gradients, higher-order methods, gradient estimation
- **Applications**: Computer vision, music generation, life sciences