

# Koustav Ghosal

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[Webpage](#) | [GitHub](#) | [Google Scholar](#)

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## Bio

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I am a Lead AI/ML Engineer (Manager) in Mastercard, training and deploying ML models at scale. Before joining Mastercard, I worked for Accenture as a research scientist. I hold a PhD in Computer Science from Trinity College Dublin and a research masters from IIIT Hyderabad, India..

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## Experience

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### Lead AI/ML Engineer | Mastercard, Dublin | December 2024 - Present

Training and deploying AI models for financial services. I take research prototypes, evaluate at scale and optimize them for production.

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### Research Scientist | Accenture Labs, Dublin | January 2022 - December 2024

As the lead MLOps developer in a large cross-functional team, I built a multi-agent system for business analytics, developed healthcare prototypes leveraging structured and unstructured electronic health records for predictive modeling and automation.

I actively mentored internal teams and engaged with clients on AI advancements. Additionally, I co-authored a research paper on AI-driven business analytics and filed a patent for a medical imaging AI tool.

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### Postdoctoral Researcher | V-SENSE, Dublin | March - December 2021

Explored vision transformers and graph neural networks for 3D human pose estimation and 3D mesh sequence compression for augmented and mixed reality applications.

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### Research Engineer | Deep Learn Labs, India | August, 2015 - March, 2016

Developed a deep learning-based prototype for vehicle detection and classification using OpenCV, Caffe, and C++.

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### Software Developer | OMitra, India | August 2014 - January 2015

Developed live in-journey features for the proof of concept such as chats, meal and cab bookings (Android utility app for train journeys)

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## Education

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### PhD in Computer Science

Trinity College Dublin, Ireland, 2017-2021

During my PhD, I worked on Computer Vision and NLP for exploring the capacity of AI to analyze photographic images. Using a large, real-world dataset of images and user comments, I built tools combining CNN, LSTM and Graph Neural Networks for applications such as image attribute prediction, image captioning, and aesthetic score regression.

Previously, I did a Research Master's in Computer Vision from IIIT-Hyderabad, India (2016) and a B-Tech in Computer Science from West Bengal University of Technology, India (2011).

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## Skills

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**Subject Areas:** Computer Vision, Natural Language Processing (NLP), Graph Machine Learning, Large Language Models (LLM), Optimisation methods, Classical ML (such as SVMs, Random Forests, Bayesian Methods), Digital Signal Processing, Database Systems

**Programming:** Python, C, C++, Java, Matlab, PyTorch, Tensorflow, GitHub, Docker, Hugging Face, Azure ML, AWS Lambda, Sagemaker, SQL, Postgres, PowerBI, Databricks, Snowflake, SparkQL

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## Publications

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1. Bao Y, Shah AP, Narang N, Rivers J, Maksey R, Guan L, Barrere LN, Evenson S, Basole R, Miao C, Mehta A. *Harnessing Business and Media Insights with Large Language Models*. arXiv preprint arXiv:2406.06559. 2024 Jun 2.
2. Koustav Ghosal, Aljosa Smolic. *Image Aesthetics Assessment Using Graph Attention Network*, International Conference on Pattern Recognition (ICPR 2022)
3. Sebastian Lutz, Richard Blythman, Koustav Ghosal, Matthew Moynihan, Ciaran Simms, Aljosa Smolic. *Jointformer: Single-Frame Lifting Transformer with Error Prediction and Refinement for 3D Human Pose Estimation*, International Conference on Pattern Recognition (ICPR 2022)
4. Ojasvi Yadav, Koustav Ghosal, Sebastian Lutz, and Aljosa Smolic. *Frequency-domain loss function for deep exposure correction of dark images*. Signal, Image and Video Processing (2021).
5. Koustav Ghosal, Aakanksha Rana, and Aljosa Smolic. *Aesthetic Image Captioning From Weakly-Labelled Photographs.*, Workshop In Cross-Modal Learning in Real World, International Conference on Computer Vision (ICCV) 2019, Seoul
6. Xu Zheng, Tejo Chalasani, Koustav Ghosal, Sebastian Lutz, Aljosa Smolic. *STaDA: Style Transfer as Data Augmentation.*, 14th International Conference on Computer Vision Theory and Applications, VISAPP 2019, Prague
7. Koustav Ghosal, Mukta Prasad, Aljosa Smolic, *A Geometry-Sensitive Approach for Photographic Style Classification*, Irish Machine Vision and Image Processing Conference, August 2018 (IMVIP), Belfast.
8. Koustav Ghosal, Ameya Prabhu, Riddhiman Dasgupta, Anoop M. Namboodiri, *Learning Clustered Subspaces for sketch-based Image Retrieval*, Asian Conference on Pattern Recognition (ACPR), November 2015, Kuala Lumpur, Malaysia.
9. Koustav Ghosal, Anoop M. Namboodiri, *A Sketch-Based Approach to Video Retrieval using Qualitative Features*, Proceedings of the Ninth Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), 14-17 Dec 2014, Bangalore, India.
10. Sanchit Aggarawal, Koustav Ghosal, Pulkit Singhal, Priyanka Srivastava, *Effect of Learning on Audio Spatial Working Memory*, Spatial Cognition 2014, Bremen, Germany, 15-19 September 2014.