Sushil Kumar Ammanaghatta Shivakumar

Email: sushilkumar.shilsuba@gmail.com Linkedin: https://www.linkedin.com/in/sushilkumaras/
Mobile: (+49) 17622338141 Website: https://sushil579.github.io/

Education

- **Albert Ludwig University of Freiburg** Freiburg, Germany
  Masters in Computer Science: Specialization in AI Oct. 2021 – Oct. 2024
  Master Thesis: A Generative Model for Video Montage Creation
- **PESIT-BSC(South Campus)** Bangalore, India
  Bachelor of Engineering in Computer Science Aug. 2017 – June 2021

Research Interests

Core Topics: Foundation Models, Generative AI, Multimodal Learning, Deep Learning In NLP and CV
Ethical Focus: Responsible AI, Human-Centered AI

Work/Research Experience

- **Research Intern (current)**:
  Max Planck Institute for Intelligent Systems (Nov. 2024-)
  Advisor: Prof. Dr. Antonio Orvieto
  - Engineered long-range music generation methods to produce coherent, expressive compositions over extended durations.
  - Implemented a robust MIDI tokenization pipeline using Byte Pair Encoding (BPE).
  - Trained MAMBA-based models to generate high-fidelity sequences with sustained melodic structure.

  Technology / Tools: Python, PyTorch, MAMBA, miditok (BPE), HTCondor
- **Master Thesis Student**:
  Zebracat AI (Feb. 2024 – Oct. 2024)
  Advisor: Mohammadreza Zolfaghari
  - Proposed a generative framework for video montage creation by aligning video representations with textual cues.
  - Reframed traditional classification methods into a regression-based embedding generation approach using GPT and UMT.
  - Surpassed prior baselines on VSPD dataset with highest IoU (0.167), lowest UMS (1.257), and top SMS (0.103).
  - Demonstrated improved retrieval quality via qualitative analysis of montage-aligned video generation.

  Technology / Tools: Python, PyTorch, HuggingFace Transformers, SLURM
- **Research Assistant**:
  Fraunhofer-Institut für Solare Energiesysteme ISE (May. 2023 – Oct. 2024)
  Advisor: Dr. Paul Gebhardt
  - Developed and deployed automated web scrapers using Selenium to retrieve academic articles across platforms.
  - Extracted and structured metadata from scientific PDFs by segmenting text blocks and identifying relevant content.
  - Utilized PyMuPDF for high-fidelity parsing of tables, diagrams, and annotated regions from research papers.

  Technology / Tools: Python, Selenium, PyMuPDF
- **Research Assistant**:
  Max Planck Institute for Security and Privacy (MPI-SP) (April. 2022 – March. 2023)
  Advisor: Prof. Dr. Asia J. Beiga
  - Investigated deceptive design patterns in GDPR implementation across the Tranco top 10k websites.
  - Designed automated tools to identify "Legitimate Interest" clauses and capture consent banners.
  - Conducted qualitative analysis using MAXQDA on screenshots and user-generated content from Reddit/Stack Exchange.

  Technology / Tools: Python, Selenium, MAXQDA

Projects

- **Training Noisy Real vs Generated Images for Attribute Classification**:
  - Compared OpenCLIP performance on real noisy images vs. synthetic images generated by Stable Diffusion.
  - Collected and curated attribute-specific datasets targeting material, pattern, group, and color labels.
  - Assessed model generalization across synthetic, real-world noisy, and OVAD datasets.
  - Determined that real noisy images offer superior generalization due to richer visual complexity.

  Technology / Tools: PyTorch, Stable Diffusion, OpenCLIP, Python , KISLURM

- **6sense – Multimodal Conversational AI for the Visually Impaired**:
  - Designed a multimodal AI agent to assist visually impaired users with indoor navigation and document understanding.
  - Integrated Mistral AI for reasoning, ElevenLabs for TTS, and deployed vision models on Runpod.
  - Secured runner-up position at **Tech: Europe** Karlsruhe AI Hackathon within a 24-hour build cycle.

  Technology / Tools: Mistral AI, ElevenLabs, Runpod, Python

Publications

- **1**: Lin Kyi, **Sushil Ammanaghatta Shivakumar**, Franziska Roesner, Cristiana Santos, Frederike Zufall, and Asia Biega. 2023. **CHI'23** Investigating Deceptive Design in GDPR's Legitimate Interest.
  - Awarded the Council of Europe's 2024 Stefano Rodotà Award in Data Protection
- **2**: AutoML Decathlon: Diverse Tasks, Modern Methods, and Efficiency at Scale. **NeurIPS 2022 Competition Track**
  - AutoML Decathlon 2022 - 2nd Runner Up

Coursework

Machine Learning, Deep Learning, Information Retrieval, Mobile Robotics, Robot Mapping.

Programming Skills

- **Languages:** Python, C/C++, Java
- **Libraries:** Pytorch, Numpy, Pandas, Selenium, PyMuPDF, Agno
- **Technologies:** MySQL, SPARQL, Git, Linux, Latex, Docker, AWS
- **Interests:** Generative AI, MLOps, Responsible AI, Data Science, Multimodal learning