


# Subash Timilsina

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📍 Corvallis, OR, USA

Ph.D. researcher in multimodal representation learning, and interpretable, controllable generative models, with first-author publications at [NeurIPS 2024](#) and [ICML 2026](#). Current work develops activation-steering methods to reduce toxicity and sycophancy in large language models. Additional publications in IEEE TSP, SPL, and ICASSP.

## Skills

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**Languages:** Python, C/C++, SQL, MATLAB,  $\LaTeX$

**ML / AI:** Generative models (GANs, VAEs, diffusion), self-supervised and multi-modal representation learning, LLM alignment (activation steering, RLHF concepts), causal inference, convex and non-convex optimization

**Architectures:** Transformers (LLMs, ViT), U-Net, autoregressive models

**Frameworks & Tools:** PyTorch, PyTorch Distributed (DDP), HuggingFace Transformers, NumPy, Scikit-learn, Weights & Biases, Git, Linux, SLURM

## Education

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**Ph.D. in Computer Science** (Minor: **Artificial Intelligence**)

*Sep 2021 – Jun 2026*

Oregon State University, Corvallis, OR

GPA: 3.97/4.00

*Thesis advisor:* [Dr. Xiao Fu](#)

*Coursework:* Deep Learning, Machine Learning, Statistical Learning, Reinforcement Learning, Convex Optimization, Linear Algebra for ML and SP, Probability Theory, Estimation Theory.

**B.E. in Electronics and Communications Engineering**

*Oct 2015 – Oct 2019*

Pulchowk Engineering Campus, Tribhuvan University, Nepal

(Top 0.8% in nationwide entrance exam)

## Professional Experience

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**Oregon State University**, Corvallis, OR

*Sep 2021 – Present*

*Graduate Research Assistant* (Advisor: [Dr. Xiao Fu](#))

- Proposed *differential independence* regularization to disentangle content and style from unpaired multi-domain images, replacing the standard statistical-independence assumption; reduced image-translation FID by 2.0 and improved style-diversity LPIPS by 0.15 over SOTA on AFHQ, CelebA-HQ, and Colored MNIST [[1](#), ICML 2026, first author].
- Developed an identifiable multimodal representation learning algorithm that disentangles domain-invariant from domain-specific features in unpaired data; improved multilingual word translation (+7%), domain adaptation (+2%), and single-cell analysis (+30%) over baselines [[3](#), [2](#); NeurIPS 2024 first author, ICML 2026].
- (Ongoing) Developing a lightweight content-style activation-steering method to reduce toxic and sycophantic generations from LLMs while preserving semantic meaning; evaluating on RealToxicityPrompts and sycophancy benchmarks.
- Developed maximum-likelihood objectives for quantized low-rank tensor completion using GAN and Deep Image Prior models, with application to multi-domain radio-map signals reconstruction from heavily quantized measurements [[5](#), [4](#), [6](#); IEEE TSP 2023, SPL 2025, ICASSP 2023].
- Designed a Jacobian-based style-encoder regularization for class-conditioned generation on long-tailed datasets; reduced FID by 6.0 over GAN-based SOTA on AnimalFacesLT, FlowerLT, CIFAR10/100-LT [[project page](#)].

**Oregon State University**, Corvallis, OR

*Sep 2021 – Mar 2026*

*Graduate Teaching Assistant – EECS Department*

- TA for Programming & Data Structures, Probability & Stochastic Processes, Signals & Systems II, and Networks in Computational Biology (also served as substitute instructor for the graduate-level offering); built a Gradescope autograder used across multiple terms.

**Docsumo**, Kathmandu, Nepal

*Jun 2020 – Jul 2021*

*Data Scientist*

- Built an OCR pipeline for structured extraction from financial documents (bank statements, invoices, W2, ACORD) combining CV (line detection, table layout) and NLP (NER, semantic matching); a hybrid visual-textual encoder improved template-matching accuracy by 5% via few-shot learning, and meta-learning fine-tuning of CascadeTabNet added +2% on table detection, reducing manual client annotation by 15%.

- Represented Nepal at Asia-Pacific Robotics Competition (Japan 2017, Vietnam 2018); contributed to perception, estimation, planning, and kinematics modules.
- Built a 3-wheeled autonomous robot for real-time sound-source-based disaster victim localization using an 8-microphone cubic array and GCC-PHAT time-delay estimation [7, ISCRAM 2020]; also developed a VAE-based audio denoiser operating on spectrograms.

## Select Publications

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1. Content-Style Identification via Differential Independence, **Subash Timilsina**, Hoang-Son Nguyen, Sagar Shrestha, Xiao Fu. *ICML 2026*. [PDF]
2. Identifiable Shared Component Analysis of Unpaired Multimodal Mixtures, **Subash Timilsina**, Sagar Shrestha, Xiao Fu. *NeurIPS 2024*. [PDF]
3. Domain Transfer Becomes Identifiable via a Single Alignment, Sagar Shrestha, **Subash Timilsina**, Hoang-Son Nguyen, Xiao Fu. *ICML 2026*. [PDF]
4. Quantized Radio Map Estimation Using Tensor and Deep Generative Models, **Subash Timilsina**, Sagar Shrestha, Xiao Fu. *IEEE Transactions on Signal Processing*, 2023. [PDF]
5. Domain-Factored Untrained Deep Prior for Spectrum Cartography, **Subash Timilsina**, Sagar Shrestha, Lei Cheng, Xiao Fu. *IEEE Signal Processing Letters*, 2025. [PDF]
6. Deep Spectrum Cartography Using Quantized Measurements, **Subash Timilsina**, Sagar Shrestha, Xiao Fu. *IEEE ICASSP 2023*. [PDF]
7. Search Disaster Victims Using Sound Source Localization, Abhish Khanal, Deepak Chand, Prakash Chaudhary, **Subash Timilsina**, Sanjeeb Prasad Panday, Aman Shakya, Rom Kant Pandey. *ISCRAM 2020*. [PDF]

### Preprints / Under Review

8. Distribution Matching via Generalized Consistency Models, Sagar Shrestha, Rajesh Shrestha, Tri Nguyen, **Subash Timilsina**. [PDF]

## Reviewing

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- Peer reviewed 20+ papers in NeurIPS, ICLR, TSP, OJSP, ICASSP.

## Awards & Achievements

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- **Nepal Government Scholarship (Top 0.8%)**: Fully funded undergraduate scholarship through nationwide engineering entrance exam.
- **Two awards at Asia-Pacific Robotics Competition** – ABU Robocon 2016-2019.
- **First Prize for Best Project** – LOCUS 2018.
- **Best Project Award (2019)**: Top thesis project, Dept. of Electronics and Computer Engineering, Pulchowk Campus.