Anirudh Som

Contact Info: **Email:** contact.anirudh.som@gmail.com **Work Authorization:** U.S. Permanent Resident LinkedIn Google Scholar

Summary:

Experienced AI/ML lead with over 10 years of expertise in machine learning and deep learning. Currently serving as the technical lead and machine learning expert at SRI, specializing in building NLP and computer vision pipelines for real-world business and government applications. Proven ability to work in multidisciplinary, cross-functional teams, design scalable solutions, and translate complex algorithms into actionable products.

Skills:

Programming – Python, Matlab, XML, Latex

Libraries/Frameworks – PyTorch, TensorFlow, Keras, Scikit-learn, Pandas, NumPy, OpenCV

NLP & Deep Learning – Transformers, Large language models, POS tagging, Tokenization, OCR

DevOps & Deployment – Docker, Kubernetes, Gitlab, Artifactory, AWS

Data Handling – Document extraction, Financial datasets, Unstructured to structured data conversion

Education:

Ph.D., Electrical Engineering – *Arizona State University*, USA **2020**

Professional Experience:

Advanced Computer Scientist – *SRI*, Princeton, NJ **2021 – Present**

- *ARPA-H PARADIGM:* Leading the medical object detection and segmentation effort, and working towards a LLM-based task guidance and planning system to help inexperienced healthcare providers in low-resource rural settings.
- *DARPA CCU:* Developed automated modules for facial analysis, scene understanding and LLM-based dialogue assessment and monitoring to help improve operator situational awareness and interactional effectiveness in various cross-cultural settings.
- *DARPA EDGE:* Developed an emotion recognition and feedback pipeline to help design better human machine interfaces (HMI) for better operator situational awareness in off-nominal situations.
- *NSF:* Served as the co-PI and developed automated student group collaboration assessment and recommendation systems by modeling individual-level and group-level behaviors in online and in-person classroom settings.
- *Commercial*: Developed proof-of-concepts and working prototypes for the following commercial clients: L'Oréal, Honda and Arcoscan.

Pre-Doctoral Experience:

[1] **Research Intern** – *SRI*, Princeton, NJ **2020**

- Developed deep-learning-based algorithms for multimodal behavior analysis and assessment of student group collaboration in a classroom setting. The deep-learning models were designed with the objective of providing meaningful information to teachers and actionable feedback to students.

[2] **Digital Pathology Intern** – *Roche Diagnostics*, Santa Clara, CA **2019**

- Developed deep-learning-based image segmentation pipelines to identify regions of necrosis in multiplex immunofluorescence digital pathology images. Worked closely with the software platform team to integrate the trained deep-learning model on the internal research software platform for enabling Field-Of-View (FOV) and Whole-Slide-Image (WSI) inference.
- Developed a Federated-learning framework for medical image analysis applications, while enabling privacy and security of patient data.

[3] **Computation Intern** – *Lawrence Livermore National Laboratory*, Livermore, CA **2018**

- **Project:** Developed time-series-based deep-learning algorithms to model electrocardiogram (ECG) signals of different heart disease conditions. Proposed and implemented several strategies to handle the data-imbalance problem across the different heart disease categories.

[4] **Graduate Intern –** *Mayo Clinic*, Phoenix, AZ **2015**

- Developed image processing and machine learning algorithms for identifying cancerous tissue regions in CT and MRI images.

Awards & Recognition:

- "Research Recognition Award" – CVT Group at SRI International **2022 – 2024**
- "Facilitators' Choice Award" - 2021 NSF STEM for All Video Showcase **2021**
- "Travel award" - Harvard CRCS workshop on AI for Social Impact **2020**
- "Most Innovative Award" - Roche Poster Symposium **2019**
- "First Position in the 2019 Digital Pathology Hackathon" - Roche **2019**

Patents:

[1] Machine Learning Model Prompt Demonstration Selection, 2025.
[2] Automated Identification of Necrotic Regions in Digital Images of Multiplex Immunofluorescence-Stained Tissue, 2024.
[3] Federated Learning System for Training Machine Learning Algorithms Without Accessing Patient Data to Protect Patient Privacy, 2022.
[4] Automated Collaboration Skills Assessment, 2021.

Publications:

[1] **A. Som**, P. Sahu, A. Divakaran, D. Vergyri
RAG-based Social Norm Detection in Multi-cultural Conversation Settings
(Unvder Review), 2025.

[2] **A. Som**, K. Sikka, H. Gent, A. Divakaran, A. Kathol, D. Vergyri
Demonstrations Are All You Need: Advancing Offensive Content Paraphrasing using In-Context Learning
Accepted at the Association for Computational Linguistics (ACL) Findings, 2024.

[3] A. Rachmatullah, N. Alozie, M. Hsiao, H. Wang, **A. Som**
Investigating the Relationship Among Solution Quality, Group Variability in Science Confidence, and Reciprocal Participation in Online Science Collaborative Problem-Solving Tasks
Accepted at the International Conference of the Learning Sciences (ICLS), 2022.

[4] N. Alozie, A. Wingard, R. Fried, B. Lopez-Prado, A. Rachmatullah, **A. Som**, M. Hsiao, H. Wang, S. Kim
Exploring the Process of Group-Based Collaboration: A Validation Argument for a Collaboration Model and Observation Rubric for Training Explainable Machine Learning Models
Accepted at the International Conference of the Learning Sciences (ICLS), 2022.

[5] **A. Som**, S. Kim, B. Lopez-Prado, S. Dhamija, N. Alozie, A. Tamrakar
Automated Student Group Collaboration Assessment and Recommendation System Using Individual Role and Behavioral Cues
Accepted at the Frontiers in Computer Science Journal, 2021.

[6] E. S. Jeon, **A. Som**, A. Shukla, K. Hasanaj, M. P. Buman, P. Turaga
Role of Data Augmentation Strategies in Knowledge Distillation for Wearable Sensor Data
Accepted at the IEEE Internet of Things Journal, 2021.

[7] **A. Som**, S. Kim, B. Lopez-Prado, S. Dhamija, N. Alozie, A. Tamrakar
Towards Explainable Student Group Collaboration Assessment Models Using Temporal Representations of Individual Student Roles
Accepted at the Educational Data Mining (EDM) Conference, 2021.

[8] E. Y. Wang, **A. Som**, A. Shukla, H. Choi, P. Turaga
Interpretable COVID-19 Chest X-Ray Classification via Orthogonality Constraint
Accepted at the ACM Conference on Health, Inference, and Learning (ACM-CHIL) Workshop, 2021.

[9] **A. Som**, S. Kim, B. Lopez-Prado, S. Dhamija, N. Alozie, A. Tamrakar
A Machine Learning Approach to Assess Student Group Collaboration Using Individual Level Behavioral Cues
Accepted at the European Conference on Computer Vision (ECCV) Workshops, 2020.

[10] H. Choi, **A. Som**, P. Turaga
AMC-Loss: Angular Margin Contrastive Loss for Improved Explainability in Image Classification
Accepted at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops, 2020.

[11] **A. Som**, H. Choi, K. N. Ramamurthy, P. Turaga
PI-Net: A Deep Learning Approach to Extract Topological Persistence Images
Accepted at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops, 2020.

[12] **A. Som,** N. Krishnamurthi, M. P. Buman, P. Turaga
Unsupervised Pre-trained Models from Healthy ADLs Improve Parkinson's Disease Classification of Gait Patterns
Accepted at International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2020.

[13] A. Nawar, F. Rahman, N. Krishnamurthi, **A. Som,** P. Turaga
Topological Descriptors for Parkinson's Disease Classification and Regression Analysis
Accepted at International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2020.

[14] **A. Som**, K. N. Ramamurthy, P. Turaga
Geometric Metrics for Topological Representations
Chapter in Springer Handbook on Variational Methods for Non-linear Geometric Data, 2020.

[15] H. Choi, **A. Som**, P. Turaga
Role of Orthogonality Constraints in Improving Properties of Deep Networks for Image Classification
Arxiv, 2020.

[16] **A. Som**, K. Thopalli, K. N. Ramamurthy, V. Venkataraman, A. Shukla, P. Turaga
Perturbation Robust Representations of Topological Persistence Diagrams
Accepted at the European Conference on Computer Vision (ECCV), 2018.

[17] **A. Som,** N. Krishnamurthi, V. Venkataraman, K. N. Ramamurthy, P. Turaga
Multiscale Evolution of Attractor-shape Descriptors for Assessing Parkinson's Disease Severity
Accepted at the IEEE Global Conference on Signal and Information Processing (GlobalSIP), 2017.

[18] **A. Som**, N. Krishnamurthi, V. Venkataraman, P. Turaga
Attractor-shape Descriptors for Balance Impairment Assessment in Parkinson's Disease
Accepted at International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2016.

[19] **A. Som**, R. Anirudh, Q. Wang, P. Turaga
Riemannian Geometric Approaches for Measuring Movement Quality
Accepted at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops, 2016.