

Rasel Ahmed Bhuiyan

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SUMMARY

Ph.D. candidate in Computer Science at the University of Notre Dame seeking an **Applied Computer Vision/Machine Learning Research Internship** to apply expertise in **segmentation, generative AI, multimodal perception, and scalable deep learning** toward real-world problems in healthcare, security, or robotics. Passionate about deploying cutting-edge research into production systems.

EDUCATION

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| Ph.D. Computer Science – University of Notre Dame, Notre Dame, IN | 12/2026 |
| Focus: Iris Recognition at Life Extremes Advisor: Adam Czajka | |
| M.Sc. Computer Science – University of Notre Dame, Notre Dame, IN | 05/2024 |
| Focus: Forensic Iris Recognition CGPA: 3.83/4.00 | |
| B.Sc. Computer Science & Engineering – University of Asia Pacific, Dhaka, BD | 03/2018 |
| Graduated with highest distinction CGPA: 3.94/4.00 | |

RESEARCH EXPERIENCE

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| University of Notre Dame | Notre Dame, IN |
| <i>Graduate Research Assistant, Computer Vision Research Laboratory (CVRL)</i> | <i>01/2023 - Present</i> |
| <ul style="list-style-type: none">• Multimodal PMI Prediction: Designed a vision model fusing RGB+NIR to reduce post-mortem interval (PMI) estimation error by 36% (77.7 → 45.8 hrs), aiding criminal investigations.• Infant Iris Recognition: Developed a universal segmentation model improving AUC from 77% → 99%, enabling real-time newborn ID systems to prevent baby swapping, reduce abductions, and improve post-natal health monitoring globally.• Synthetic Data Generation: Created a PMI-conditioned StyleGAN2 generator, synthesizing 180K+ forensic iris images to reduce data scarcity and enhance training and benchmarking.• Open-Source Tools: Built the largest post-mortem iris dataset (338+ subjects) and released a forensic iris toolkit with explainable AI for human-in-the-loop analysis. | |

TECHNICAL PROJECTS

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| Iris Recognition Pipeline <i>PyTorch, Scikit-Learn, OpenCV, Pillow, Pandas</i> |
| <ul style="list-style-type: none">• Built an open-source end-to-end pipeline (segmentation → recognition → visualization). GitHub• Achieved <3% EER on infant iris datasets, outperforming SOTA. |
| Real-time ASL Recognition <i>PyTorch, Scikit-Learn, CVZONE, OpenCV</i> |
| <ul style="list-style-type: none">• Trained a CNN-based gesture recognition system with <50ms latency, optimized for robotics integration. GitHub |
| Iris Presentation Attack Detection <i>PyTorch, Scikit-Learn, Pillow</i> |
| <ul style="list-style-type: none">• Developed a deep-learning based PAD model with >95% accuracy on unseen attack types, enhancing biometric security. GitHub |

TECHNICAL SKILLS

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| Programming Languages: Python, MATLAB |
| Libraries and Tools: MLOps, PyTorch, TensorFlow, OpenCV, Scikit-learn, Pandas, NumPy, Matplotlib, Git, L ^A T _E X |
| ML & CV: Vision-Language Models, Object Detection, Generative AI, Segmentation |
| Platforms: HPC Clusters, Multi-GPU Training, Distributed Computing |
| Specialties: Biometric AI, Health AI, Iris & Face Recognition, Visual Intelligence, Multimodal Learning, Few-shot Learning |

PUBLICATIONS & HONORS

- **Best Paper Award – WACV 2025:** *Iris Recognition for Infants*.
- 10+ peer-reviewed publications (IEEE T-BIOM, WACV, VSS, Springer Nature, MDPI) with **200+ citations**.
- Fully Funded Graduate Assistantship, University of Notre Dame.