

Md Alimoor Reza

Department of Mathematics and Computer Science
Drake University
Des Moines, Iowa, USA

+1 215-200-9567
md.reza@drake.edu
<http://analytics.drake.edu/~reza/>
Google Scholar Link

EDUCATION

- 2018 **Ph.D.** in Computer Science
George Mason University, Advisor: Jana Kosecka
Dissertation: “*Scene Understanding for Robotic Application*”
- 2011 **M.S.** in Computer Science
Drexel University
Thesis: “*Automated Categorization of Drosophila Learning & Memory Behaviors using Video Analysis*”
- 2007 **B.Sc. Engg.** in Computer Science and Engineering
Bangladesh University of Engineering and Technology (BUET)

PROFESSIONAL EXPERIENCE

- 2021– Assistant Professor (Tenure Track)
Drake University, Department of Computer Science, (Des Moines, IA)
- 2018–21 Postdoctoral Associate
Indiana University, Department of Computer Science, (Bloomington, IN)
- 2011–18 Graduate Research/Teaching Assistant
George Mason University, Department of Computer Science (Fairfax, VA)
- 2017 Summer Journeyman Fellow
US Army Research Laboratory (Adelphi, MD)
- 2015 R&D Summer Intern
CRSL, 3M Company (St. Paul, MN)
- 2008–11 Research/Teaching Assistant
Drexel University, Department of Computer Science (Philadelphia, PA)
- 2007-08 Software Engineer
Structured Data Systems Ltd (Dhaka, Bangladesh)

PUBLICATIONS

Papers in competitive peer-reviewed conference proceedings:

- Eric Manley, Timothy Urness, Andrei Migunov, and **Md Alimoor Reza**. “Examining Student Use of AI in CS1 and CS2” *CCSC Central Plains Region Conference, 2024*.

- Vibhas Vats, Sripad Joshi, David Crandall, **Md Alimoor Reza**, Soon-Heung Jung. “GC-MVSNet: Multi-Source Multi-Scale Geometrically Consistent Multi-View Stereo” *IEEE/CVF Winter Conference on Computer Vision (WACV)*, 2024.
- I. Kabir, S. Shaurya, N. Thakurdesai, V. Maigur, M. Latnekar, M. Raunak, D. Crandall, and **M. Reza**. “Few-shot Segmentation and Semantic Segmentation for Underwater Imagery.” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2023 .
- J. Chawla, N. Thakurdesai, A. Godase, **M. Reza**, D. Crandall, S. Jung. “Error Diagnosis of Deep Monocular Depth Estimation Models.” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021.
- **M. Reza**, S. Alajlouni, M. Chivukula, K. Maize, P. Bermel, A. Shakouri, and D. Crandall. “Electromigration Network: Failure Prediction and Localization from Optical and Thermal Imagery.” *International Conference on Physical Assurance and Inspection of Electronics (PAINE)*, 2021.
- Andrei Amatuni, Sara Schroer, Ryan Peters, **Md Alimoor Reza**, Yayun Zhang, David Crandall, and Chen Yu. “In-the-Moment Visual Information from the Infant’s Egocentric View Determines the Success of Infant Word Learning: A Computational Study.” *Annual Conference of the Cognitive Science Society (CogSci)*, 2021.
- Shujon Naha, Qingyang Xiao, Prianka Banik, **Md Alimoor Reza**, and David Crandall. “Part Segmentation of Unseen Objects using Keypoint Guidance” *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2021.
- Shujon Naha, **Md Alimoor Reza**, Chen Yu, and David Crandall. “Localizing Novel Attended Objects in Egocentric Views.” *British Machine Vision Conference (BMVC)*, 2020.
- Tsuitsui Satoshi, Arjun Chandrasekaran, **Md Alimoor Reza**, David Crandall, and Chen Yu. “A Computational Model of Early Word Learning from the Infant’s Point of View.” *Annual Conference of the Cognitive Science Society (CogSci)*, 2020.
- **Md Alimoor Reza**, Akshay Naik, Kai Chen and David Crandall. “Automatic Annotation for Semantic Segmentation in Indoor Scenes.” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.
- **Md Alimoor Reza**, Philip David, and Jana Kosecka. “FarSight: Long-Range Depth Estimation from Outdoor Images.” *IEEE/RSJ International Conf. on Intelligent Robots & Systems (IROS)*, 2018.
- **Md Alimoor Reza**, Hui Zhang, Georgios Georgakis, and Jana Kosecka. “Label Propagation in RGB-D Video.” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2017.
- Georgios Georgakis, **Md Alimoor Reza**, Arsalan Mousavian, P. Le and Jana Kosecka. “Multiview RGB-D Dataset for Object Instance Detection.” *International Conf. on 3D Vision (3DV)*, 2016.
- Georgios Georgakis, **Md Alimoor Reza**, and Jana Kosecka. “RGB-D Multi-View Object Detection with Object Proposals and Shape Context.” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2016.
- **M. Reza**, J. Marker, S. Mhatre, A. Saunders, D. Marendia, D. E. Breen. “Video Analysis Algorithms for Automated Categorization of Fly Behaviors.” *International Symposium on Visual Computing (ISVC)*, 2012.

Articles in Peer-Reviewed Journals

- Chuhua Wang, **Md Alimoor Reza**, Vibhas Vats, Nikhil Thakurdesai, Yuchen Wang, David Crandall, Jeongil Seo, and Soon-Heung Jung. “Deep learning-based 3D Reconstruction from Multiple Images: A Survey.” *Elsevier Neurocomputing (NEUCOM’23)*. (Under Review).
- Joshua Smith, **Md Alimoor Reza**, Nathanael Smith, Jianxin Gu, David Crandall, and Sara Skrabalak. “Plasmonic Anti-counterfeit Tags with High Encoding Capacity Rapidly Authenticated with Deep Machine Learning.” *Journal ACS Nano*, 2021. (**Impact Factor 18.027**).
- **Md. Alimoor Reza**, Kai Chen, Akshay Naik, David Crandall and Soon-heung Jung. “Automatic Dense Annotation for Monocular 3D Scene Understanding.” *IEEE Access*, 2020.
- **Md. Alimoor Reza**, Zhenhua Chen and David Crandall. “Deep Neural Network Based Detection and Verification of Microelectronic Images.” *Journal of Hardware and System Security (HaSS)*, 2019.
- Mark Zarella, David Breen, **Md. Alimoor Reza**, Aladin Milutinovic and Fernando Garcia. “Lymph Node Metastasis Status in Breast Carcinoma can be Predicted via Image Analysis of Tumor Histology.” *Journal of Analytical and Quantitative Cytology and Histopathology*, 2015.
- **M. Reza**, S. D. Mhatre, J. C. Morrison, S. Utreja, A. J. Saunders, D. E. Breen and D. R. Marena. “Automated analysis of courtship suppression learning and memory in *Drosophila melanogaster*.” *Journal-Fly*, 2013.

Papers in peer-reviewed workshops:

- Yimeng Li, Navid Rajabi, Sulabh Shrestha, **Md Alimoor Reza**, and Jana Kosecka. “Labeling Indoor Scenes with Fusion of Out-of-the-Box Perception Models.” *The 2nd Workshop on Pretraining in conjunction with IEEE/CVF Winter Conference on Computer Vision (WACV)*, 2024.
- Lutfus Sayeed and **Md. Alimoor Reza**. “Legal NLP in English to Analyze the Independent Contractor - Employee Classification” *TREO (Technology, Research, Education, and Opinion) in conjunction with International Conference on Information System (ICIS)*, 2022.
- **Md. Alimoor Reza** and David Crandall. “IC-ChipNet: Deep Embedding Learning for Fine-grained Retrieval, Recognition, and Verification of Microelectronic Images.” *49th IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, 2020.
- Tsutsui Satoshi, Arjun Chandrasekaran, **Md. Alimoor Reza**, David Crandall, and Chen Yu. Learning to Associate Spoken Words and Visual Objects from Egocentric Video of Parent-infant Social Interaction. *The workshop on Egocentric Perception, Interaction and Computing (EPIC) in conjunction with (CVPR 2020)*.
- Shujon Naha, Qingyang Xiao, Prianka Banik, **Md. Alimoor Reza**, and David Crandall. “Pose-Guided Knowledge Transfer for Object Part Segmentation.” *Workshop on Visual Learning with Limited Labels in Conjunction with (CVPR)*, 2020.
- Satoshi Tsutsui, Dian Zhi, **Md. Alimoor Reza**, David Crandall, Chen Yu. “Active Object Manipulation Facilitates Visual Object Learning: An Egocentric Vision Study.” *Workshop on Egocentric Perception, Interaction and Computing (EPIC) in conjunction with (CVPR)*, 2019.
- E. Dessalene, G. Georgakis, **M. Reza**, Y. Li, Y. Ovcharik, A. Shapiro, J. Kosecka and D. Lofaro. “A Contact Exploitative Approach to the Amazon Robotics Challenge.” *Warehouse Picking and*

Automation Workshop in conjunction with (ICRA), 2017.

- **Md. Alimoor Reza** and Jana Kosecka. “Reinforcement Learning for Semantic Segmentation in Indoor Scenes.” *Geometry and Beyond-Representations, Physics, and Scene Understanding for Robotics in conjunction with (RSS), 2016.*
- **Md. Alimoor Reza** and Jana Kosecka. “Semantic Segmentation in Indoor Scenes from Supervised Object-Background Hypotheses.” *SUNw: Scene Understanding Workshop in conjunction with (CVPR), 2015.*
- **Md. Alimoor Reza** and Jana Kosecka. “Object Recognition and Segmentation in Indoor Scenes from RGB-D Images.” *RGB-D: Advanced Reasoning with Depth Cameras in conjunction with (RSS), 2014.*

BOOK CHAPTERS

- **Md. Alimoor Reza** and Syed Masum Billah. “Robot-Mediated Assistance: Opportunities and Challenges in Computer Vision and Human-Robot Interaction.” *Trends and Challenges of Computer Vision Research, CRC Press (Taylor & Francis), 2023.*

PATENTS

- Soon-heung Jung, David Crandall, Vibhas Kumar Vats, Shaurya Shubham, and **Md Alimoor Reza**. “Method and apparatus for estimating depth information of images.” *Application US20230326051A1 (US18/297,396, October, 2023).*
- Soon-Heung Jung, Seo Jeongil, David Crandall, and **Md Alimoor Reza**. “Depth Estimation Method and Apparatus using Learning Model.” *Application US20230169671A1 (US17/535,921, June, 2023).*
- Soon Heung Jung, Seo Jeongil, Jagpreet Singh Chawla, Nikhil Thakurdesai, David Crandall, **Md Reza**, and Anuj Godase. “Method and Apparatus for Correcting Error in Depth Information Estimated from 2D Image.” *Application US20220351397A1 (US17/306,429, November, 2022).*

GRANTS

- **Towards Accessibility-Aware Human-Centered Image Segmentation for People with Disabilities**, Seed Fund, College of Information and Technology, The Pennsylvania State University (PSU), *Amount: \$33000*, Co-PI with Syed Masum Billah (PSU), 2022-2023.
- **Deep Learning Based Object Grasping for Robots**, *NASA Iowa Space Grant Consortium, Amount: \$3250*, PI with Christopher Porter (Drake), 2021-2022.

TEACHING EXPERIENCE

Drake University

Spring 2024

CS 167: Machine Learning

Spring 2024	CS 191: Computer Science Capstone
Fall 2023	CS 167: Machine Learning
Fall 2023	CS 65: Introduction to Computer Science
Spring 2023	CS 124: Artificial Intelligence
Spring 2023	CS 65: Introduction to Computer Science
Fall 2022	CS 135: Robotics
Fall 2022	CS 65: Introduction to Computer Science
Spring 2022	CS 195: Computer Vision
Spring 2022	CS 65: Introduction to Computer Science
Fall 2021	CS 65: Introduction to Computer Science

Indiana University

Spring 2022	E583 Information Visualization (Guest Lecturer for Katy Borner)
Spring 2021	B657/B457: Computer Vision (Instructor)
Spring 2021	E583 Information Visualization (Guest Instructor for Katy Borner)
Fall 2019	B551: Elements of Artificial Intelligence (Guest Instructor for David Crandall)
Fall 2018	B551: Elements of Artificial Intelligence (Co-instructor with David Crandall)

George Mason University

2015-18	CS 112: Intro. to Computer Programming (Lead Graduate Teaching Assistant)
Fall 2014	INFS 755: Data Mining (Graduate Teaching Assistant)
Fall 2014	CS 310: Data Structures (Graduate Teaching Assistant)
Fall 2011	CS 211: Intro. to Object Oriented Programming (Graduate Teaching Assistant)

INVITED AND CAMPUS TALKS

- 10/2023 “Few-shot Segmentation and Semantic Segmentation for Underwater Imagery.” IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Detroit, MI.
- 12/2022 “Legal NLP in English to Analyze the Independent Contractor-Employee Classification”, BRAC Business School Seminar, BRAC University, Bangladesh, 2022
- 02/2021 “Towards Intelligent Machines that can Visually Perceive their Surroundings”, Drake University, Des Moines, IA.
- 02/2021 “Towards Intelligent Machines that can Visually Perceive their Surroundings”, Texas A&M University Corpus Christi, TX.
- 04/2020 “Artificial Intelligence: Successful Applications and Limitations”, Webinar, Professional Advancement Bangladesh Limited, Dhaka, Bangladesh.
- 03/2020 “Enhancing Visual Perception of Intelligent Agents: Robotics, Computer Vision, and Beyond”, Loyola University Chicago, Chicago, IL.

- 01/2020 “Enhancing Visual Perception of Intelligent Agents: Robotics, Computer Vision, and Beyond”, University of Nebraska Omaha, Omaha, NE.
- 07/2019 “Deep Neural Network Based Detection and Verification of Microelectronic Images”, PAINE Conference 2019, Crystal City, VA.
- 08/2018 “Scene Understanding for Robotic Application”, CRANE-Vis meeting, Indiana University.
- 05/2018 “Scene Understanding for Robotic Application”, US Army Research Lab, Adelphi, MD.

AWARDS AND HONORS

- 2023 **First Place**, Poster Competition (Role: Faculty Mentor, Mentee: **Elena Pierce**), Consortium for Computing Sciences in Colleges, CCSC: Central Plains (Overland Park, KS).
- 2022 **First Place**, Poster Competition (Role: Faculty Mentor, Mentees: **Sigi Brock and Gonzalo Valdenebro**), Consortium for Computing Sciences in Colleges, CCSC: Central Plains (Springfield, MO).
- 2018 Outstanding Graduate Teaching Assistant Award, George Mason University (Fairfax, VA).
- 2017 ORAU Summer Journeyman Fellowship Award, U.S.Army Research Lab (Adelphi, MD).
- 2017 Distinguished Graduate Teaching Assistant Award, George Mason University (Fairfax, VA).
- 2017 Ranked 3rd, PhD Research Symposium, CS Dept., George Mason University (Fairfax, VA).
- 2014 Student Travel Grant, Robotics: Science and Systems’2014.
- 2010 Dean’s Fellowship Award (Drexel University College of Engineering).
- 2009 Upsilon Pi Epsilon: Inducted to Society for Computing & Information (Philadelphia, PA).
- 2007 Dean’s Merit List, Bangladesh University of Engg. and Tech. (Dhaka, Bangladesh).
- 2005 Honorable Mention, AIUB Inter University Programming Contest (Dhaka, Bangladesh).
- 2002 Ranked 107th, BUET Admission Test Excellence Scholarship (Dhaka, Bangladesh).
- 2001 Ranked 20th, Higher Secondary Certificate Examination (Rajshahi, Bangladesh).
- 1999 Ranked 15th, Secondary School Certificate Examination (Rajshahi, Bangladesh).

ACADEMIC SERVICE

Conference Area Chair:

- 2024 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), IEEE Winter Conference on Applications of Computer Vision (WACV),
- 2023 IEEE Winter Conference on Applications of Computer Vision (WACV)

Conference Associate Editor:

- 2020 IEEE International Conference on Robotics and Automation (ICRA)

Conference Program Committee Member:

- 2024 AAAI Conference on Artificial Intelligence (AAAI)

- 2022 International Conference on Physical Assurance and Inspection of Electronics (PAINE)
- 2021 International Conference on Physical Assurance and Inspection of Electronics (PAINE)
- 2021 AAAI Conference on Artificial Intelligence (AAAI)
- 2020 International Joint Conference on Artificial Intelligence (IJCAI)
- 2020 International Conference on Physical Assurance and Inspection of Electronics (PAINE)
- 2019 Conference on Robot Learning (CoRL)
- 2019 International Joint Conference on Artificial Intelligence (IJCAI)

Journal Reviewer:

- 2021 IEEE Robotics and Automation Letters (RA-L)
- 2021 ACM Transactions on the Web (TWEB)
- 2020 IEEE Transaction on Multimedia
- 2019-22 IEEE Transaction of Image Processing (TIP)
- 2018 IEEE Robotics and Automation Letters (RA-L)
- 2017 International Journal of Computer Vision (IJCV)

Conference Reviewer:

- 2024 European Conference on Computer Vision (ECCV), Asian Conference on Computer Vision (ACCV)
- 2023 International Conference on Computer Vision (ICCV), IEEE Conference on Computer Vision and Pattern Recognition (CVPR), International Conference on Learning Representation (ICLR)
- 2022 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), International Conference on Pattern Recognition (ICPR), Asian Conference on Computer Vision (ACCV), British Machine Vision Conference (BMVC)
- 2021 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), International Conference on Computer Vision (ICCV), , IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- 2020 European Conference on Computer Vision (ECCV), Asian Conference on Computer Vision (ACCV), IEEE Conference on Computer Vision and Pattern Recognition (CVPR), IEEE Winter Conference on Applications of Computer Vision (WACV), IEEE International Conference on Robotics and Automation (ICRA), IEEE International Conference on Automation Science and Engineering (CASE), USENIX Security Symposium
- 2019 IEEE International Conference on Robotics and Automation (ICRA), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Automation Science and Engineering (CASE), International Conference on Computer Vision (ICCV)
- 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- 2014 European Conference on Computer Vision (ECCV)

Reading Groups:

2018-21 Organizer, Computer Vision Reading Group, Indiana University.

Student Advising:

- Shujon Naha (*Ph.D.*), “Learning from Ego-centric Images and Videos” (Indiana University).
- Ziwei Zhao (*Ph.D.*), “Image-based Indoor Scene Layout Estimation” (Indiana University).
- Mitziu Echeverria (*Ph.D.*), “Bypassing ReCaptcha Images” (University of Iowa).
- Akshay Naik (*M.S.*), “Pixel-level Automatic Annotation for Indoor Scene” (Indiana University).
- Jagpreet Chawla (*M.S.*), “Analyzing and Improving Monocular Depth Estimation Models using Error Detection Network” (*M.S. thesis*) (Indiana University).
- Nikhil Thakurdesai (*M.S.*), “Image segmentation using graph neural networks” (*M.S. thesis*) (Indiana University).
- Vibhas Kumar (*M.S.*), “Response-based knowledge distillation” (*M.S. thesis*) (Indiana University).
- Vijayalaxmi Maigur (*M.S.*), “Improving Segmentation by Learning from 3D” (Indiana University).
- Pranav Gujarathi (*M.S.*), “Navigation via Deep Reinforcement Learning” (Indiana University).
- Manjulata Chivukula (*M.S.*), “Micro-electronics Image Analysis” (Indiana University).
- Shaurya Shubham (*M.S.*), “Few-shot Underwater Semantic Segmentation” (Indiana University).
- Vansh Shah (*M.S.*), “Few-shot Underwater Semantic Segmentation” (Indiana University).
- Mahesh Latnekar (*M.S.*), “Foreground Segmentation for Underwater Imagery” (Indiana University).
- Mayank Raunak (*M.S.*), “Foreground Segmentation for Underwater Imagery” (Indiana University).
- Kai Chen (*B.S. Student Summer Intern*), “Automatic Annotation Improvement” (Fudan University).
- Jerry Guo (*B.S. Student Summer Intern*), “Anti-counterfeit Material Image Analysis” (USTC, China).
- Gonzalo Valdenebro (*B.S. Student*) (Drake University).
- Uzma Hamid (*B.S. Student*) (Drake University).
- Matt Bice (*B.S. Student*) (Drake University).
- Sigi Brock (*B.S. Student*) (Drake University).
- Ryan Holt (*B.S. Student*) (Drake University).
- Julian Guzman (*B.S. Student*) (Drake University).
- Elena Pearce (*B.S. Student*) (Drake University).
- Sameer Chaudhury (*B.S. Student*) (Drake University).
- Adam Haroon (*B.S. Student*) (Iowa State University).
- Nick Haisler (*B.S. Student*) (Drake University).
- Maddie Backhaus (*B.S. Student*) (Drake University).
- Hailey Grotluschen (*B.S. Student*) (Drake University).
- Thomas Reynolds (*B.S. Student*) (Drake University).
- Anil Singh (*B.S. Student*) (Drake University).
- Erjon Parashumti (*B.S. Student*) (Drake University).

- Lawton Peng (*B.S. Student*) (Drake University).
- Evan Scherrer (*B.S. Student*) (Drake University).
- Ujan RoyBandyopadhyay (*B.S. Student*) (Drake University).
- Sean Chen (*B.S. Student*) (Drake University).
- William Clayton (*B.S. Student*) (Drake University).
- Jake Elafros (*B.S. Student*) (Drake University).
- Tushar Mittal (*B.S. Student*) (Drake University).

Service to Department

- Poster competition for Consortium for Computing Sciences in Colleges, faculty mentor, 2023.
- Poster competition for Consortium for Computing Sciences in Colleges, faculty mentor, 2022.
- Drake University Inclusive Scholars of Digital Proficiency Scholarship (ISDP) committee, 2022.

REFERENCES

- Jana Kosecka, Professor, CS, George Mason University (kosecka@gmu.edu)
- David Crandall, Luddy Professor of Computer Science, Indiana University (djcran@indiana.edu)
- Chen Yu, Charles and Sarah Seay Regents Professor of Developmental Psychology, The University of Texas at Austin (chen.yu@austin.utexas.edu)
- Katy Borner, Professor, Victor H. Yngve Professor of Engineering & Information Science, Indiana University (katy@indiana.edu)
- Ko Nishino, Professor, IST, Kyoto University (kon@i.kyoto-u.ac.jp)
- Philip David, U.S. Army Research Lab (ARL) (philip.j.david4.civ@mail.mil)