# Md Alimoor Reza

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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:**

- Nikhil Thakurdesai, Md Alimoor Reza, and David Crandall. "Image Segmentation of Table-Top Objects using Graph Neural Networks." (*In-Preparation*).

- Shubham Shaurya, Imran Kabir, Vijayalaxmi Maigur, Nikhil Thakurdesai, Md Alimoor Reza, and David Crandall. "Few-shot Segmentation for Underwater Imagery." (*In-Preparation*).

- Md Alimoor Reza, Nikhil Thakurdesai, David Crandall, and Soon-Heung Jung. "Stereo Matching Network with Densely Connected 3D Convolution." (*In-Preparation*).

- Jagpreet Chawla, Nikhil Thakurdesai, Anuj Godase, Md Alimoor Reza, David Crandall, Soon-Heung Jung. "Error Diagnosis of Deep Monocular Depth Estimation Models." *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.*

- Md Alimoor Reza, Sami Alajlouni, Manju Chivukula, Kerry Maize, Peter Bermel, Ali Shakouri, and David 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 Conference on Intelligent Robots and 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 Conference 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. Marenda, 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, Yingnan Ju, Nikhil Thakurdesai, Yuchen Wang, David J. Crandall, and Soon-Heung Jung "A Survey on 3D Reconstruction with Multiple Images." (*In-Preparation*).

- 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 14.57**).

- 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 Milutinuvic 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. Marenda. "Automated analysis of courtship suppression learning and memory in Drosophila melanogaster." *Journal-Fly, 2013.*

**Papers in peer-reviewed workshops:**

- Md. Alimoor Reza and David Crandall. "IC-ChipNet: Deep Embedding Learning for Fine-grained Retrieval, Recognition, and Verification of Microelectronic Images." $49^{th}$ *IEEE Applied Imagery Pattern Recognition Workshop (AIPR), 2020.*

- Tsuitsui 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.*

## 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

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|---|---|
| Fall 2022 | CS 135: Robotics (Instructor) |
| Fall 2022 | CS 65: Introduction to Computer Science (Instructor) |
| Spring 2022 | CS 195: Computer Vision (Instructor) |
| Spring 2022 | CS 65: Introduction to Computer Science (Instructor) |
| Fall 2021 | CS 65: Introduction to Computer Science (Instructor) |

### Indiana University

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| 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

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| 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

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| 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

| 2022 | **First Place**, Poster Competition (**Role: Faculty Mentor**), 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:**

| 2022 | IEEE Winter Conference on Applications of Computer Vision (WACV) |

**Conference Associate Editor:**

| 2020 | IEEE International Conference on Robotics and Automaton (ICRA) |

**Conference Program Committee Member:**

| 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) |
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| 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:**

| 2023 | International Conference on Learning Representation (ICLR) |
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| 2022 | Neural Information Processing Systems (NeurIPS), 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).
- Maddie Backhaus (*B.S. Student*) (Drake University).
- Hailey Grotluschen (*B.S. Student*) (Drake University).
- Matt Bice (*B.S. Student*) (Drake University).
- Sigi Brock (*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).
- Ryan Holt (*B.S. Student*) (Drake University).
- Julian Guzman (*B.S. Student*) (Drake University).

**Service to Department**

- 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)