NATANIEL RUIZ

nruiz9@bu.edu | natanielruiz.github.io | github.com/natanielruiz

EDUCATION

Ph.D. Candidate, Boston University, Boston, MA — GPA : 4.0 / 4.0 — (expected) 2018 - 2022
Ph.D. Candidate in Computer Science
Advisor: Prof. Stan Sclaroff
Research Group: Image and Video Computing

M.Sc., Georgia Institute of Technology, Atlanta, GA — GPA : 3.90 / 4.0 — 2016 - 2017
M.Sc. in Computer Science
Advisor: Prof. James M. Rehg
Research Group: Behavioral Imaging

B.Sc. / M.Sc., Ecole Polytechnique, Paris, France — Graduate GPA : 3.86 / 4.0 — 2013 - 2016
N°1 Ranked French Grande Ecole in Science and Technology
Bachelor of Science & Master of Science in Data Science

Lycée Jean-Baptiste Say, Paris, France — GPA : 3.80 / 4.0 — 2011 – 2013
N°1 Ranked Program in Physics, Technology and Industrial Science.
2-year intensive preparation in Mathematics and Physics for the nationwide Grande Ecole entrance examinations.
Admitted to Ecole Polytechnique (0.6% acceptance rate).

AWARDS

Twitch Research Fellowship Finalist (2020), Twitch

Travel Award (2019), International Conference on Learning Representations (ICLR)

Distinguished Presenter and Brilliant Award (2019), 4th Annual Boston University Data Science Day

Dean's Fellowship (2018-2019), Boston University

Outstanding Leadership Award (2016, 2% award rate), Ecole Polytechnique

Excellence-Major Valedictorian Scholarship (2011-2016), French Government

PUBLICATIONS

[Paper, In Submission]
Nataniel Ruiz, Sarah Adel Bargal, Stan Sclaroff. "Disrupting DeepFakes: Adversarial Attacks Against Conditional Image Translation Networks and Facial Manipulation Systems" *Submitted* (2020)

[Paper, CVPR 2020, accepted]
Eunji Chong, Yongxin Wang, **Nataniel Ruiz**, James M. Rehg. "Detecting Attended Visual Targets in Video" Accepted to *The IEEE Conference on Computer Vision and Pattern Recognition* 2020

[Paper, NECV 2019]
Nataniel Ruiz, Mona Jalal, Vitaly Ablavsky, Danielle Allessio, John Magee, Jacob Whitehill, Ivon Arroyo, Beverly Woolf, Stan Sclaroff, and Margrit Betke. "Leveraging Affect Transfer Learning for Behavior Prediction in an Intelligent Tutoring System" *New England Computer Vision Workshop (NECV)* (2019)

[Paper, ICLR 2019]
Nataniel Ruiz, Samuel Schulter, Manmohan Chandraker. "Learning To Simulate" *International Conference on Learning Representations (ICLR)* (2019)

[Paper, ECCV 2018]
Eunji Chong, **Nataniel Ruiz**, Yongxin Wang, Yun Zhang, Agata Rozga, James M. Rehg. "Connecting Gaze, Scene, and Attention: Generalized Attention Estimation via Joint Modeling of Gaze and Scene Saliency." *The European Conference on Computer Vision (ECCV)*, (2018), pp. 383-398

[Paper, Arxiv 2018]
Meera Hahn, **Nataniel Ruiz**, Jean-Baptiste Alayrac, Ivan Laptev, James M Rehg. "Learning to Localize and Align Fine-Grained Actions to Sparse Instructions." *arXiv preprint arXiv:1809.08381* (2018)

[Paper, CVPRW 2018]
Nataniel Ruiz, Eunji Chong, and James M. Rehg. "Fine-Grained Head Pose Estimation Without Keypoints." In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops*, pp. 2074-2083. (2018) **(Oral)**

[Paper, UBICOMP 2017, IMWUT 2017]
Eunji Chong, Katha Chanda, Zhefan Ye, Audrey Southerland, **Nataniel Ruiz**, Rebecca M. Jones, Agata Rozga, and James M. Rehg. "Detecting Gaze Towards Eyes in Natural Social Interactions and Its Use in Child Assessment." *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 1, no. 3 (2017): 43 **(Oral and Distinguished Paper Award - 3% award rate)**

[Paper, Arxiv 2017]
Nataniel Ruiz, and James M. Rehg. "Dockerface: an Easy to Install and use Faster R-CNN Face Detector in a Docker Container." *arXiv preprint arXiv:1708.04370* (2017)

PRESENTATIONS

Invited Talks

Feb 2020 Massachusetts Institute of Technology, Computer Science and AI Laboratory, Vision and Graphics Group, seminar

Nov 2019 Georgia Institute of Technology, School of Interactive Computing, seminar

Oct 2019 University of Massachusetts at Amherst, College of Information & Computer Sciences, guest lecture

Sep 2019 Apple Inc., Machine Learning Vice President, research presentation

Aug 2019 Apple Inc., Siri, research presentation

Aug 2019 Apple Inc., AI Research, research presentation

Feb 2019 Boston University, Department of Computer Science, AI Research Lab, seminar

Feb 2019 Boston University Data Science Day, distinguished presenter

Jan 2019 Boston University, AI Research Lab Retreat, invited presentation

Jan 2019 KPMG, Bolivia, machine learning seminar

Aug 2018 NEC Laboratories America Inc., research presentation

Contributed Talks

Dec 2019 New England Computer Vision Workshop (NECV), Brown University, oral presentation

Sep 2019 Machine Intelligence Conference, Boston University, oral presentation

Jun 2018 Conference on Computer Vision and Pattern Recognition (CVPR), Automatic Face and Gesture Recognition Workshop, oral

Posters

Dec 2019 New England Computer Vision Workshop (NECV), Brown University

May 2019 International Conference on Learning Representations (ICLR)

Feb 2019 Boston University Data Science Day

Jun 2018 Conference on Computer Vision and Pattern Recognition (CVPR), Automatic Face and Gesture Recognition Workshop

RESEARCH EXPERIENCE

Apple AI Research, Cupertino, CA May 2019 - August 2019
Research Assistant Intern
- Worked with **Dr. Nick Apostoloff** and **Dr. Barry Theobald** on computer vision and machine learning. Work in submission.

Boston University, Boston, MA September 2018 - Present
Research Fellow
- Working with **Prof. Stan Sclaroff** and **Prof. Margrit Betke** on topics related to facial analysis, behavior understanding, image translation and simulation.

NEC Laboratories America, Inc, Cupertino, CA February 2018 - August 2018
Research Assistant Intern
- Worked with **Prof. Manmohan Chandraker** and **Dr. Samuel Schulter** on topics related to self-driving car perception, visual data simulation and reinforcement learning. One paper accepted to ICLR on the topic of learning to simulate.

Georgia Institute of Technology, Atlanta, GA December 2016 – December 2017
Graduate Research Assistant
- Worked with **Prof. James Rehg** on facial analysis, behavior understanding, first person vision and mobile computer vision.
- Co-authored four papers, one tech-report and released three open-source computer vision applications in 2017 while taking a full-time course load.

Massachusetts Institute of Technology, Cambridge, MA May 2016 – August 2016
Visiting Research Assistant (funding: Bill and Melinda Gates Foundation Grant)
- Worked with **Dr. Lalana Kagal** and **Dr. Kalyan Veeramachaneni** building a deep learning application on Android for visual detection of diseases in cassava plant leaves. Deployed the application on the field in Kampala, Uganda.

REVIEWER

Conference on Computer Vision and Pattern Recognition (CVPR)

International Conference on Computer Vision (ICCV)

Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

Transactions on Neural Networks and Learning Systems (TNNLS)

Transactions on Cybernetics

SELECTED PROJECTS

1,500+ stars on original machine learning GitHub repositories at github.com/natanielruiz

Deep Learning Head Pose Estimation
- Head pose estimation deep neural network bundled with pre-trained models.

Android-YOLO
- Open source real-time object detection deep learning system on an Android device.

Dockerface
- Open source deep learning face detection in a Docker container.

EGTEA Gaze+ Dataset
- Co-lead the annotation of a large open-access egocentric vision action recognition dataset.

Udacity Lecture
- Authored an online lecture for Prof. James M. Rehg on Facial Landmark Detection to be released by Georgia Tech on the Udacity platform.

PRESS

Learning to Simulate in Medium

- 13,000+ views
- Front page on Y Combinator's Hacker News
- Front page on Towards Data Science

LEADERSHIP & AFFILIATIONS

TEDxEcolePolytechnique, Ecole Polytechnique 2014 – 2016
President and founder

- Founded and organized the first TEDx conference at Ecole Polytechnique.
- Recruited and managed the 2015 and 2016 student teams.

Entrepreneurship Student Society, Ecole Polytechnique 2014 – 2016
Speaker & Startup Relations Manager

- Organized the first Startup Showcase and job fair at Polytechnique.
- Obtained the participation of over ten startups for the Startup Showcase.
- Obtained the participation of entrepreneur coaches and a panel of senior entrepreneur judges for the Startup Weekend event.

SELECTED GRADUATE COURSEWORK

Boston University
Deep Learning (CS 591), Advanced Optimization Algorithms (CS 531)

Georgia Institute of Technology
Machine Learning (CS 7641), Computer Vision (CS 6476), Advanced Computer Vision (CS 7476), Natural Language (CS 7650), Data and Visual Analytics (CS 6476), Knowledge Based AI (CS 7637)

Ecole Polytechnique
Statistical Learning and Non-Parametric Estimation (MAP 553), Machine Learning (INF 582), Operations Research (MAP 557)

RESEARCH MENTORSHIP

Yongxin Wang (B.S. in C.S., 2017, Georgia Tech) - now M.Sc. student, Computer Vision at Carnegie Mellon University
Vaishali Sarathy (M.Sc. in C.S., 2017, Georgia Tech) - now at Schlumberger

SKILLS AND LANGUAGES

Python, C++, Java, Matlab – PyTorch, TensorFlow, scikit-learn – GNU/Linux, bash – SQL – some Android, HTML, PHP.
Fluent in English, French and Spanish.

LINKS AND REFERENCES

All papers, pre-prints and code can be found at natanielruiz.github.io