Camilo Luciano Fosco

275 Medford St. Apt 2 - Somerville, MA 02143

camilolu@mit.edu **camilofosco@gmail.com** **(617) 955 9145**

EDUCATION

Massachusetts Institute of Technology *Cambridge, MA*

PhD., Computer Science. GPA: 5.00/5.00 *exp. May 2023*

- PhD Candidate in CS and AI at the Computational perception and Cognition Lab, advised by Dr. Aude Oliva.
- Research focus: computer vision and cognitive science. Building human-inspired attention and memory models for visual data.

Harvard University *Cambridge, MA*

M.E., Computational Science and Engineering. GPA: 4.00/4.00 *Aug 2017 - May 2019*

- Relevant coursework: Data Science, Advanced Machine Learning, Reinforcement Learning, Stochastic Optimization.
- Relevant projects: Interpretability Tool for ML models, Adversarial Video Generation, Reinforcement Learning for Sepsis Treatment.
- Awards: Fulbright Scholarship, Harvard IACS Scholarship, Lacroze de Fortabat Fellowship, Cahn Fund Fellowship.

Universidad de Buenos Aires *Buenos Aires, Argentina*

Electronics Engineer degree (bachelor's + master's). GPA: 8.11/10.00. "Diploma de Honor" (top 5%). *Mar 2010 – Aug 2016*

- Relevant coursework: Algorithms & Programming I, II, III - Probability & Statistics - Advanced Signal Processing I, II.
- First to graduate from 2010 cohort. Studies completed in 6 years - university average for EE is 10.3 years.

EXPERIENCE

Research Intern *Cambridge, MA*

Facebook *Jun 2020 - Sep 2020*

- Researched scale-invariant representations for deep learning-based video understanding that approximate human memory.
- Developed novel module that substantially improves training time and robustness in action recognition and localization models.

Software Engineering Intern *Mountain View, CA*

Google *Jun 2019 - Aug 2019*

- Developed new deep learning model for business storefront classification from StreetView images.
- Constructed probabilistic graphical model for hierarchical classification. Module was built as a model-agnostic Keras layer.

Research Assistant *Cambridge, MA*

MIT CSAIL – Computational Perception Group *Sep 2018 - Present*

- Developed video understanding models under Dr. Aude Oliva, focusing on multi-modal embeddings and memorability prediction.
- Created model that surpassed state-of-the-art in memorability prediction for images and videos.
- Built novel net to disentangle objects from dynamics in videos. Potential applications: event search and retrieval, video generation.

Data Science Teaching Fellow *Cambridge, MA*

Harvard University *Aug 2018 - Dec 2018*

- Teaching advanced sections. Introduces complex concepts and deepens lecture topics. Lectures given include: hypothesis testing, linear and logistic regression, regularization, decision trees, ensemble methods, neural networks.
- Built detailed notes and homework questions on the topics mentioned. Emphasized theory, intuition and best practices.

Machine Learning Intern *Santa Clara, CA*

NVIDIA – Intelligent Video Analytics Team *May 2018 - Aug 2018*

- Researched and implemented deep learning architectures for Human Action Recognition (2D and 3D CNNs). Adapted state-of-the-art methods, implemented multiple papers as recent as CVPR 2018, and combined promising ideas. Used Tensorflow and Keras.
- Developed novel deep architecture adapted to internal data. Obtained state-of-the-art accuracy on open datasets.
- Built 7 production-ready models with varying accuracy/speed trade-offs.
- Created full software suite (>10k loc) for internal pipeline allowing easy training, validation and tuning of video-based models.
- Worked with large GPU clusters and adapted models to perform massively parallel training and evaluation jobs.

Research Assistant *Cambridge, MA*

MIT CSAIL - Graphics Group *Feb 2018 - May 2018*

- Researched techniques for visual design understanding (web ads, posters, etc.), advised by Zoya Bylinskii and Fredo Durand.
- Worked with latest deep learning architectures for saliency and semantic segmentation.
- Surpassed state-of-the-art on importance prediction (Bylinskii et al. 2017) with novel interpretations of advanced networks such as Deeplabv3+ (Chen et al. 2018, segmentation) and SAM (Cornia et al. 2016, saliency). Publication in progress.

Research Engineer *Buenos Aires, Argentina*

Tenaris - Center for Industrial Research (CINI) *Jul 2015 - Jan 2017*

- Designed and tested automated computer vision system (hardware + software) for high precision scanning of cylindrical surfaces.
- Implemented multiple image processing techniques including novel segmentation and object detection methods.
- Worked with SVMs, decision trees and neural networks (MLPs and CNNs). Produced a high accuracy flaw detector and classifier.

PROJECTS

Exigo - Analysis tool for interpretability and fairness in ML *Cambridge, MA*

Main developer. Website: cfosco.github.io/exigo *Feb 2018 - May 2018*

- Developed model-agnostic tool that analyzes a given machine learning model and produces a complete report including feature interpretation (how each feature affects the output) and fairness metrics (bias towards a given class or group of datapoints).

NYU Abu Dhabi International Hackathon (1st Place) *Abu Dhabi, United Arab Emirates*

Developer on Project HIAT. Info: bit.ly/2Q9sUfq *Apr 2017*

- Designed gig-economy platform for secure job search and payment, aimed at solving the unemployment and language barrier problem for Syrian refugees in Turkey. Coded in Python, HTML & CSS.

BFC Sensors - IoT telemetry start-up *Buenos Aires, Argentina*

Co - Founder. Website: www.bfc-sensors.com *Jan 2014 – Jan 2017*

- Built start-up dedicated to wireless telemetry services with low cost sensors and easy to use web platform.
- Prototype *Boreas* won 1st Prize in Health category at the BA Internet of Things 2015 competition.

Generating video from captions *Cambridge, MA*

Main developer *Mar 2018 - May 2018*

- Developed deep learning model that generates a short video given only a caption (e.g. "man walks to the right") and a first frame The model learns in an adversarial setting. Trained on multiple GPUs with open datasets.

RESEARCH

C. Fosco*, V. Casser*, A. Newman*, B. McNamara, A. Oliva.
To Decay or Not To Decay: Modeling Video Memorability over Time
NeurIPS 2019 SVRHM Workshop

C. Fosco*, A. Newman*, Y. B. Zhang, P. Sukhum, A. Oliva, Z. Bylinskii.
How Many Glances? Modeling Multi-duration Saliency
NeurIPS 2019 SVRHM Workshop

A. Newman, B. McNamara, **C. Fosco**, Y. B. Zhang, P. Sukhum, M. Tancik, N. W. Kim, Z. Bylinskii.
TurkEyes: A Web-Based Toolbox for Crowdsourcing Attention Data.
ACM CHI Conference on Human Factors in Computing Systems 2020.

C. Fosco*, A. Andonian*, A. Lee, M. Monfort, R. Feris, C. Vondrick, B. Zhou, A. Oliva
We Have So Much In Common: Modeling Semantic Relational Set Abstractions in Videos
European Conference on Computer Vision (ECCV) 2020

A. Newman*, **C. Fosco***, V. Casser, B. McNamara, A. Oliva.
Multimodal Memorability: Modeling Effects of Semantics and Decay on Video Memorability
European Conference on Computer Vision (ECCV) 2020

C. Fosco*, A. Newman*, Y. B. Zhang, P. Sukhum, A. Oliva, Z. Bylinskii.
How much time do you have? Modeling Multi-duration Saliency
Conference on Computer Vision and Pattern Recognition (CVPR) 2020

C. Fosco, V. Casser, A. Bedi, A. Hertzman, P. O'donovan, Z. Bylinskii.
Predicting Visual Importance Across Graphic Design Types
User Interface Software and Technology Symposium (UIST) 2020.

HONORS AND AWARDS

Siebel Scholarship, 2020
Awarded to top graduate students in Computer Science, Business, Bioengineering and Energy Science with leadership potential.

Fulbright Scholarship, 2017-2018
Awarded to outstanding international student. Jointly funded by Argentina and USA.

Harvard IACS Scholarship, 2018
Awarded to top 2 students in the CSE Master of Engineering.

Amelia Lacroze de Fortabat Fellowship, 2018
Awarded to outstanding Argentinian student at Harvard.

Francis and Peggy Cahn Fund, 2017
Awarded to outstanding Argentinian student at Harvard.

Honors Diploma, 2016
Awarded to top 5% of students in Electrical Engineering.

Outstanding Student Mention, 2018
Awarded by the University of Buenos Aires to previous students having received international recognition.

ARFITEC Scholarship, 2014
Scholarship for promoting Argentinian and French collaboration.

SKILLS

Code: Python, Matlab, C, C++, Java, Javascript, Tensorflow, Pytorch. **Languages:** Spanish, French, English, Portuguese (Basic)