

MARCELO SANDOVAL-CASTAÑEDA

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EDUCATION

Toyota Technological Institute at Chicago, Illinois, USA **Sept 2022 – Present**

PhD in Computer Science. GPA: 4.0.

Supervised by: Dr. Gregory Shakhnarovich.

Research work in the intersection of Computer Vision and Natural Language Processing, with specific focus in unsupervised understanding of American Sign Language using Deep Learning models.

New York University Abu Dhabi, Abu Dhabi, UAE **Sept 2016 – May 2020**

Bachelor of Science in Computer Science and Film & New Media.

Thesis title: AutoTag: Automated Metadata Tagging for Film Post-Production.

Supervised by: Dr. Dennis Shasha, Prof. Scandar Copti.

EMPLOYMENT

Research Assistant, Center for Cyber Security, NYU Abu Dhabi Oct 2020 – Sept 2022

Working on cybersecurity projects related to misinformation: (1) Investigating cross-platform dynamics from YouTube videos shared in other social media platforms for the spread of misinformation and counter-misinformation *in collaboration with Georgia Institute of Technology*; (2) Exploring the role of medical preprint repositories and journals in the spread of health-related misinformation *in collaboration with Georgia Institute of Technology*.

Working on cybersecurity projects related to multimedia forensics: (1) Investigating the effectiveness of several Bayesian deep learning approaches to common image forensics problems (i.e. scaling factor estimation, image manipulation classification, deepfake detection), developing benchmarks for them, and constructing a toolbox for Bayesian media forensics *in collaboration with NYU Tandon*; (2) Exploring face recognition systems' vulnerabilities to master face attacks from generative deep learning models *in collaboration with NYU Tandon*.

Relevant skills: TensorFlow, TensorFlow Probability, PyTorch, Hugging Face Transformers.

Research Assistant, Psychology Department, NYU Abu Dhabi May 2020 – Aug 2020

Appointed as part of the Post-Graduation Training Program (PPTP) by Dr. Olivia Cheung (Objects and Knowledge Laboratory) and Dr. Kartik Sreenivasan (Sreenivasan Laboratory).

Worked in developing a web-based platform for psychophysics experiments primarily focused on memory, object recognition, and contextual and semantic relationships between objects.

Relevant skills: JavaScript, jsPsych, MATLAB.

Cognitive Solutions Engineer, Cognitiva Peru **Jun 2019 – Apr 2020**

Originally a summer internship that became a remote part-time position.

Worked on multiple data Science, computer vision, and natural language processing projects for medium-sized and large companies in the country, in industries such as consumer goods and public relations.

Relevant skills: IBM Cloud, Google Cloud Platform, TensorFlow, Docker.

PROJECTS

Automation of Film Post-Production Tasks **Sept 2019 – Apr 2021**

Undergraduate thesis and further research following graduation.

Developed a set of tools to automate time- and budget-consuming tasks in the Film Post-Production pipeline, after conducting interviews with filmmakers. These tasks included cinematographic shot identification, transcription, matching screenplay scenes with their corresponding media files based on dialogue, and a search tool that includes all metadata generated

this way. Written in Python, Extendscript, and Javascript for the non-linear editing software Adobe Premiere Pro.

Conducted user studies to assess the performance of our tool through measuring agreement between professionals in the field in classifying cinematographic shots, and then comparing it to the agreement between our tool and these professionals.

Conducted further user studies to determine the impact of our tool in the film post-production pipeline by having it be used in different film projects, including filmmakers across different industries and cultures, and one feature film by an Academy Award nominee.

AI for Good COVID-19 Simulator for Refugee Camps **Apr 2020 – Dec 2020**
Voluntary work with AI for Good UK.

Network-based SEIRS model in Python, with social interactions originally based on the Moria Refugee Camp in Greece. Eventually extended to model other refugee camps, based on geography, residents' schedules, and availability of resources.

Presented to NGOs that manage Moria's health resources as part of their preemptive effort to reduce the potential damage caused by the coronavirus pandemic.

Twitter usage during the Cyclone Amphan catastrophe **Jul 2020 – Sept 2020**
Collaboration between International Water Management Institute (IWMI) and Solve for Good.

Exploration of methodologies that leverage Twitter discourse to characterize narratives and identify unmet needs in response to Cyclone Amphan, which affected 18 million people in 2020.

Presented at the NeurIPS 2020 Tackling Climate Change with Machine Learning workshop and the IJCAI 2020 AI for Social Good workshop.

PUBLICATIONS

[R&R - Multimedia Tools and Applications] **Sandoval-Castañeda, M.**, Copti, S., and Shasha, D. AutoTag: Automated Metadata Tagging for Film Post-Production.

Micallef, N., **Sandoval-Castañeda, M.**, Ahamad, M., Kumar, S., Cohen, A., and Memon, N. Cross-Platform Post-Video Misinformation: Taxonomy, Characteristics, and Detection. In *International Conference on Web and Social Media (AAAI ICWSM)*. 2022.

Crayton A., Fonseca, J., Mehra, K., Ng, M., Ross, J., **Sandoval-Castañeda, M.**, and von Gnetchen, R. Narratives and Needs: Analyzing Experiences of Cyclone Amphan Using Twitter Discourse. In *IJCAI 2021 Workshop on AI for Social Good*. 2021.

SERVICE

Reviewer, Nature Scientific Reports **Mar 2023**
CS Representative, Student Government, NYUAD **Sept 2019 – May 2020**
Undegraduate Peer Tutor, NYUAD **Jan 2019 – Dec 2019**

REFERENCES

Prof. Gregory Shakhnarovich, Toyota Technological Institute at Chicago gregory@ttic.edu
Professor

Prof. Karen Livescu, Toyota Technological Institute at Chicago klivescu@ttic.edu
Professor

Prof. Nasir Memon, New York University memon@nyu.edu
Vice Dean for Student and Academic Affairs, Tandon Online

Prof. Mustaque Ahamad, Georgia Institute of Technology ma3@gatech.edu
Associate Director - Educational Outreach, Institute for Information Security and Privacy

Prof. Dennis Shasha, New York University shasha@cims.nyu.edu
Associate Director, NYU Wireless

Dr. Srijan Kumar, Georgia Institute of Technology srijan@gatech.edu
Assistant Professor