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Jingwei Ma

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EDUCATION

University of Washington Seattle, WA
Ph.D. in Computer Science and Engineering *Sep 2021 – Present*
Advisors: Steve Seitz, Ira Kemelmacher-Shlizerman, Brian Curless

Massachusetts Institute of Technology (MIT) Cambridge, MA
M.Eng in Electrical Engineering and Computer Science *Jun 2020 – May 2021*
BS in Electrical Engineering and Computer Science *Sep 2016 – May 2020*
Advisors: Antonio Torralba, Phillip Isola
Relevant Coursework: Computational Cognitive Science, Algorithms for Inference, Machine Learning, Advanced Computer Vision, Software Construction, Design and Analysis of Algorithms, Computation Structures, VR App Development, Interconnected Embedded Systems, Computational Photography

PUBLICATIONS

Jingwei Ma, Lucy Chai, Minyoung Huh, Tongzhou Wang, Phillip Isola, Antonio Torralba. "Totem: Verifying the Integrity of Visual Information using Neural Light Fields." In Submission, CVPR 2022.

EMPLOYMENT

Totem: Verifying the Integrity of Visual Data using Neural Light Fields Cambridge, MA
Student Researcher (w/ Prof. Antonio Torralba and Prof. Phillip Isola) *June 2020 – Present*

- Trained/implemented different methods: (1) Using siamese model to directly compare image and totem patches, (2) Using pix2pix+siamese model to unwarp totem and compare patches, and (3) Using NeRF to synthesize new views from totem and compare patches.

RealVirtualhome: Neural Rendering for Indoor Simulator Cambridge, MA
Student Researcher (w/ Prof. Antonio Torralba) *June 2019 - May 2020*

- Trained Image-to-Image GANs to generate realistic images from simulator metadata.
- Worked with many datasets (ADE20K, LSUN) and models (openpose, MegaDepth, Uppernet).
- Improved generation realness by generating more object details.

Transfer Learning for Threat Detection at Security Checkpoints Sunnyvale, CA
Computer Vision Intern (w/ Synapse Technology) *Jan 2019*

- Studied SOTA work in Transfer Learning and proposed 5 potential solutions within a week.
- Implemented the domain classifier approach and ran experiments.

Multi-Person Pose and Gesture Recognition for Autonomous Driving Santa Clara, CA
Research Intern (w/ Team DriveIX, NVIDIA) *May 2018 – Aug 2018*

- Trained models in keras and tensorflow. Did model pruning and optimization with TensorRT.
- Worked with public datasets (Human3.6M, COCO) and wrote scripts for making custom datasets.
- Built a multi-threading pipeline to compute 2d, 3d pose, gesture, tracking real-time with 1 GPU.

Vidmap: 3D Scene Reconstruction for Movies Cambridge, MA
Student Researcher (w/ Prof. Antonio Torralba and Prof. Sanja Fidler) *Sep 2017 - May 2019*

- Used segmentation and masking to isolate rigid components for reconstruction.
- Labeled and clustered scenes by aligning scripts and subtitles of movies.
- Created a synthetic movie dataset with Blender.

PROJECTS, AWARDS, AND HONORS

HackMIT - OpenChoreo: Learning How to Dance from any Dance Video *Fall 2019*

- Awarded Top 10 and "Best Augmented Reality", sponsored by Niantic, Inc.
- Designed a human-pose matching algorithm using joint angles.

HackMIT - Music for All: World's Most Affordable Piano *Fall 2018*

- Won "Best Impossible Hack", sponsored by Pear VC.
- Made a piano using cardboard and detected piano keys from laptop webcam frames.

Pitch Competition - 3D Object Generation w/ AlphaZero-inspired MCTS and Octrees *Winter 2017*

- Won Best Google award.

HackMIT - MIT Sorting Hat: Sort People into MIT Dorms *Fall 2017*

- Awarded Top 10 and "Best Internet of Things", sponsored by Samsara.
- Created an original dataset. Used bag of words and semantic distance to calculate matching.

Startup project - Lambda Tea: Self-serve Boba Dispenser *Fall 2017*

- Cofounder. Project got into MIT sandbox 2017 and Y Combinator winter 2018.

Hack at Brown - Vox.io: Control Computers with Voice from anywhere *Spring 2016*

- Runner-up for Best Microsoft Prize.
- Implemented a language understanding model to match voice commands to computer commands.

OTHER

Skills: Python, Linux, bash, Keras, Tensorflow, PyTorch, Matlab, Blender, Unity, Java, JavaScript, Arduino
Activities: MIT Pistol Team, Undergraduate Student Government, EECS Undergraduate Research Conference co-organizer