Mikaela Angelina Uy

Gates Computer Science, Rm 239
Stanford, CA 93405

Email: mikacuy@stanford.edu
https://mikacuy.github.io

Education

Stanford University — **CA, USA**
Ph.D. Candidate in Computer Science — Sept 2019 – present
Advisor: Prof. Leonidas Guibas

National University of Singapore — **Singapore**
Master of Computing (Computer Science); CAP: 4.58/5.0 — 2017 – 2018
Scholarship: NUS Graduate Scholarship for ASEAN Nationals (full masters scholarship)

Hong Kong University of Science and Technology — **Hong Kong**
BSc. in Mathematics and Computer Science — 2013 – 2017
CGA: 3.84/4.3; CS CGA: 4.16/4.3; First Class Honors
Scholarship: HKSAR Government Targeted Scholarship (full 4-year university scholarship)

Selected Publications

NeRF Revisited: Fixing Quadrature Instability in Volume Rendering
Mikaela Angelina Uy, George Kiyohiro Nakayama, Guandao Yang, Leonidas Guibas, Ke Li
(In submission)

DiffFacto: Controllable Part-Based 3D Point Cloud Generation with Cross Diffusion
George Kiyohiro Nakayama, **Mikaela Angelina Uy**, Jiahui Huang, Shi-Min Hu, Ke Li, Leonidas Guibas
International Conference of Computer Vision (**ICCV**), 2023
Website: https://difffacto.github.io

OptCtrlPoints: Optimizing Control Points for Biharmonic 3D Shape Deformation
Kunho Kim*, **Mikaela Angelina Uy***, Despoina Paschalidou, Alec Jacobson, Leonidas Guibas, Minhyuk Sung
Pacific Graphics 2023 (Full Paper)

SCADE: NeRFs from Space Carving with Ambiguity-Aware Depth Estimates
Mikaela Angelina Uy, Ricardo Martin-Brualla, Leonidas Guibas, Ke Li
Computer Vision and Pattern Recognition (**CVPR**), 2023.
Website: https://scade-spacecarving-nerfs.github.io

PartNeRF: Generating Part-Aware Editable 3D Shapes without 3D Supervision
Konstantinos Tertikas, Despoina Paschalidou, Boxiao Pan, Jeong Joon Park, **Mikaela Angelina Uy**, Ioannis Emiris, Yannis Avrithis, Leonidas Guibas
Computer Vision and Pattern Recognition (**CVPR**), 2023.

Point2Cyl: Reverse Engineering 3D Objects from Point Clouds to Extrusion Cylinders
Mikaela Angelina Uy*, Yen-yu Chang*, Minhyuk Sung, Purvi Goel, Joseph Lambourne, Tolga Birdal, Leonidas Guibas
Computer Vision and Pattern Recognition (**CVPR**), 2022.
Website: https://point2cyl.github.io

Joint Learning of 3D Shape Retrieval and Deformation
Mikaela Angelina Uy, Vladimir G. Kim, Minhyuk Sung, Noam Aigerman, Siddhartha Chaudhuri, Leonidas Guibas
Computer Vision and Pattern Recognition (**CVPR**), 2021.
Website: https://joint-retrieval-deformation.github.io

Deformation-Aware 3D Shape Embedding and Retrieval

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Mikaela Angelina Uy, Jingwei Huang, Minhyuk Sung, Tolga Birdal, Leonidas Guibas
European Conference on Computer Vision (**ECCV**), 2020.
Website: https://deformscan2cad.github.io

LCD: Learned Cross-Domain Descriptors for 2D-3D Matching
Quang-Hieu Pham, **Mikaela Angelina Uy**, Binh-Son Hua, Duc Thanh Nguyen, Sai-Kit Yeung
AAAI Conference on Artificial Intelligence (**AAAI**), 2020. **Oral**
Website: https://hkust-vgd.github.io/lcd/

Revisiting Point Cloud Classification: A New Benchmark Dataset and Classification Model on Real-World Data
Mikaela Angelina Uy, Quang-Hieu Pham, Binh-Son Hua, Duc Thanh Nguyen, Sai-Kit Yeung
International Conference of Computer Vision (**ICCV**), 2019. **Oral**
Website: https://hkust-vgd.github.io/scanobjectnn/

Work Experiences

Google — **Seattle, USA**
Research Intern — Jun 2023-present
- Sparse, unconstrained, dynamic NeRF reconstruction
- Mentors: Ke Li, Xuan Luo

Google — **Mountain View, USA**
Research Intern — Jun 2022-Jan 2023
- Sparse, unconstrained NeRF reconstruction with ambiguity-aware depth estimates
- Mentors: Ke Li, Mirko Visontai

Autodesk AI Lab — **San Francisco, USA (Remote)**
Research Intern — Jun 2021-Sept 2021
- Learning and understanding of 3D CAD and solid models
- Mentors: Joseph Lambourne

Adobe Research — **Seattle, USA (Remote)**
Research Intern — Jun 2020-Sept 2020
- 3D shape deformation techniques and parametric model understanding
- Mentors: Vladimir G. Kim, Minhyuk Sung, Noam Aigerman, Siddhartha Chaudhuri

Hong Kong University of Science and Technology — **Hong Kong**
Research Assistant — Sept 2018-Jun 2019
- 3D scene understanding and point cloud learning using deep learning techniques
- Supervisor: Prof. Sai-Kit Yeung

Invited Talks

Google — July 12, 2023
NeRF Revisited: Fixing Quadrature Instability in Volume Rendering

SFU Visual Computing and Robotics (VCR) Seminar — June 26, 2023
Towards Controllable 3D Content Creation by Leveraging Geometric Priors

Structural and Compositional Learning on 3D Data CVPR Workshop — June 18, 2023
Towards Controllable 3D Content Creation by Leveraging Geometric Priors

KAIST — January 9, 2023

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SCADE: NeRFs from Space Carving with Ambiguity-Aware Depth Estimates

VinAI Seminar Series July 22, 2022
Learning to Vary 3D Models for Universally Accessible 3D Content Creation

Brown Vision Computing Seminar April 11, 2022
Learning to Vary 3D Models for Universally Accessible 3D Content Creation

Stanford G-Cafe March 10, 2022
Point2Cyl: Reverse Engineering 3D Objects from Point Clouds to Extrusion Cylinders

Teaching Experiences

Stanford CS 348n Guest Lecture May 31, 2023
Neural Radiance Fields: Sparse View and Dynamic Scenes

Stanford CS 348n Guest Lecture May 24, 2023
Continuous and Discrete Shape Edits/Deformation

Stanford CS 348n Guest Lecture February 16, 2022
Neural Shape Variation and Generation

Computer Graphics: Geometric Modeling/Processing (CS 348a) Winter 2021
Teaching Assistant, Stanford

- Taught recitation class once a week, held office hours twice a week, and graded all exams, homeworks and projects in the class.

Introduction to Computer Science (COMP 1021) **Hong Kong**
Lab Assistant, HKUST Sept–Dec 2014

- Taught in lab sessions of the introductory class in Python.

Selected Awards

EECS Rising Stars 2023 2023
Apple AI/ML PhD Research Fellowship 2023
Snap Research Fellowship 2022
Meta PhD Fellowship Finalist 2023
School of Engineering Fellowship, *Stanford University* 2019-2020
HKSAR Government Targeted Scholarship 2013-2017
NUS Graduate Scholarship for ASEAN Nationals 2017-2018
Epsilon Fund Award, *HKUST Mathematics Department* 2017
Google Women Techmakers Scholarship; *Asia Pacific* 2016
International Mathematical Olympiad (IMO) Bronze Medalist 2012, 2013
Philippine Mathematical Olympiad 1st runner-up 2012, 2013

Services

Reviewer: CVPR, ICCV, ECCV, SIGGRAPH, SIGGRAPH Asia, BMVC, 3DV, AAAI, TVCG, Eurographics, Neurips

Volunteer Competitive Math Trainor
Trained the PH IMO Team ’17-’20; PH team leader for various elementary Math Olympiads

Projects

Interpretable & Actionable Models using Attribute & Uncertainty Information Autumn 2019

- CS229 (Machine Learning) course project

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- Deep-learning models can be difficult to understand and control intuitively due to the black-box nature of these models. However, such lack of interpretability and human actionability in the models' decision processes make it difficult to trust these models in critical applications. We propose to alleviate these problems using attribute and uncertainty modeling.

Bachelor's Thesis (Underwater Robotics Vision) 2016 – 2017

- Advised by Prof. Chi-Keung Tang
- Studied the performance of real-time object detection models, both using handcrafted features and deep learning networks, for underwater diver detection in robotics applications.

HKUST Robotics Team, Remotely Operated Vehicle (ROV) Sub team
Software Engineer 2014 – 2015

- **Overall 3rd Place** (Explorer Class) – 14th Annual MATE International Underwater Robotics Competition in *St John's, Newfoundland and Labrador, Canada*
- **Asia Champion** in 2015 MATE Asia Regional Underwater Robotics Competition
- Built the main control software of the ROV and Qt GUI's for the competition runs.
- The team was composed of 15 engineers who built and designed the ROV from scratch.

Technical Skills Python, C/C++, Unix, Tensorflow, Pytorch, MATLAB, OpenCV, ROS, microcontroller programming

Languages **Native**: English, Filipino, Hokkien; **Proficient**: Mandarin