Boyuan Chen

Ph.D. Candidate, Columbia University
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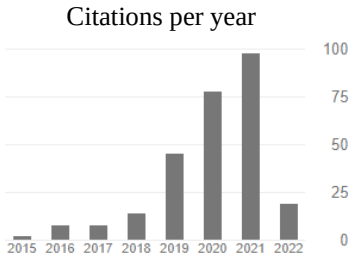
Research Interests

Robotics, Computer Vision, Machine Learning
Data-Driven Discovery and Control of Dynamical Systems

Key Academic Metrics

Citations	275
H-index	8
Publications	15
Invited talks	14
Mentored students	16
Research awards	12



Education

Columbia University New York, NY Jan. 2018 – June 2022
Ph.D., Computer Science
– Thesis: Embodiment Intelligence of Self, Others and Dynamics
– Advisor: Hod Lipson
– Committee: Carl Vondrick, Shuran Song, Paul Sajda

Columbia University New York, NY Sept. 2016 – Dec 2017
M.S., Computer Science
– Topics: AutoML, Robot Grasping and Motion Planning
– Advisor: Hod Lipson, Peter Allen

University of Manchester Manchester, UK Jan. 2016 – June 2016
Undergraduate Thesis, Control System
– Thesis: Advanced Control System Design for Vertical Take-Off and Landing Aircraft

Jilin University Jilin, China Sept. 2012 – June 2016
B.S., Biomedical Engineering
– Outstanding Graduated Students (top of class)
– Major: Biomedical Engineering and Electrical Engineering

Publications

15. **Boyuan Chen,** Robert Kwiatkowski, Carl Vondrick, Hod Lipson
Full-Body Visual Self-Modeling of Robot Morphologies
Under review at Science Robotics (**Sci. Robot**), 2021
Project Webpage

14. **Boyuan Chen,** Yuhang Hu, Hod Lipson
    EMO1.0: Animatronic Robotic Face with Predictive Facial Expressions
    In preparation at Science Robotics (**Sci. Robot**), 2021

13. **Boyuan Chen,** Kuang Huang, Sunand Raghupathi, Ishaan Chandratreya, Qiang Du, Hod Lipson
    Uncovering Neural State Variables from Videos
    Under Review at Nature Physics (**Nature Physics**), 2021
    Project Webpage

12. **Boyuan Chen**, Mia Chiquier, Hod Lipson, Carl Vondrick
    The Boombox: Visual Reconstruction from Acoustic Vibrations
    Conference on Robot Learning (**CoRL**), 2021
    Project Webpage

11. **Boyuan Chen**, Yuhang Hu, Robert Kwiatkowski, Shuran Song, Hod Lipson
    Visual Perspective Taking for Opponent Behavior Modeling
    International Conference on Robotics and Automation (**ICRA**), 2021
    Project Webpage

10. **Boyuan Chen**, Yuhang Hu, Lianfeng Li, Sara Cummings, Hod Lipson
    Smile Like You Mean It: Driving Animatronic Robotic Face with Learned Models
    International Conference on Robotics and Automation (**ICRA**), 2021
    Project Webpage

9. Yiqing Liang, **Boyuan Chen**, Shuran Song
    SSCNav: Confidence-Aware Semantic Scene Completion for Visual Semantic Navigation
    International Conference on Robotics and Automation (**ICRA**), 2021
    Project Webpage

8. **Boyuan Chen**, Yu Li, Sunand Raghupathi, Hod Lipson
    Beyond Categorical Label Representations for Image Classification
    International Conference on Learning Representations (**ICLR**), 2021
    Project Webpage

7. **Boyuan Chen**, Carl Vondrick, Hod Lipson
    Visual Behavior Modelling for Robotic Theory of Mind
    Nature Scientific Reports (**Sci. Rep.**), 2021
    Project Webpage

6. Zanwar Faraj, Mert Selamet, Carlos Morales, Patricio Torres, Maimuna Hossain, **Boyuan Chen**, Hod Lipson
    Facially Expressive Humanoid Robotic Face
    HardwareX 2021

5. **Boyuan Chen**, Shuran Song, Hod Lipson, Carl Vondrick
    Visual Hide and Seek
    Conference on Artificial Life (**ALife**), 2021
    Best Poster Award Project Webpage

4. Dave Epstein, **Boyuan Chen**, Carl Vondrick
    Oops! Predicting Unintentional Action in Video

Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020
Project Webpage

3. Iretiayo Akinola, Jacob Varley, **Boyuan Chen**, Peter Allen
Workspace Aware Online Grasp Planning
International Conference on Intelligent Robots and Systems (**IROS**), 2018
Project Webpage

2. **Boyuan Chen**, Harvey Wu, Warren Mo, Ishanu Chattopadhyay, Hod Lipson
Autostacker: A Compositional Evolutionary Learning System
The Genetic and Evolutionary Computation Conference (**GECCO**), 2018

1. Iretiayo Akinola, **Boyuan Chen**, Jonathan Koss, Aalhad Patankar, Jake Varley, Peter Allen
Task Level Hierarchical System for BCI-enabled Shared Autonomy
International Conference on Humanoid Robots (**Humanoids**), 2017
Project Webpage

Work Experience

Allen Institute for AI June. 2021 – Aug 2021
Research Scientist Intern
Advisor: Roozbeh Mottaghi, Aniruddha Kembhavi

Columbia Robotics Lab Sept. 2016 – Aug 2017
Graduate Research Assistant
Advisor: Peter Allen

Teaching Experience

Computer Vision (Instructor: Carl Vondrick) Fall 2018
AI Safety, Ethics and Policy (Instructor: Chad Dechant) Spring 2018
Humanoid Robotics (Instructor: Peter Allen) Spring 2017

Awards and Honors

ALife Best Poster Award July 2020
ALife Student Scholarship Award May 2020
Facebook Research Award Oct. 2019
ACM Student Travel Grant July 2018
Chinese National Excellent Undergraduate Fellowship (1/2000) May 2015
Space Technology Innovation Fellowship, Chinese Academy of Science Dec. 2014
JLU Outstanding Graduates Mar. 2016
JLU Top 10 Electrical Engineering Student Nov. 2016
First Prize in RobotChallenge Competition (Domestic) Aug. 2015
JLU First Class Fellowship 2014–2015
Dong Rong Fellowship 2013–2014
First Prize in Electronic Design Contest, JLU Mar. 2013

Press Coverage

The American Society of Mechanical Engineers: An AI-Driven Robot Smiles Back
Forbes: A Robot That Smiles: Scientists Have Created A Robot That Responds To Human Facial Expressions
Columbia Engineering: The Robot Smiled Back
Daily Mail: Smile like you mean it! Scientists develop an eerily human-like robot head with ...
TechXplore: Researchers create robot that smiles back
CTV News: This robot can mimic your facial expression by watching you
NSF: Deep learning networks may prefer the human voice -- as we do
Columbia Engineering: Deep Learning Networks Prefer the Human Voice—Just Like Us
ACM: Deep Learning Networks Prefer the Human Voice
Columbia Magazine: Self-Aware Robots? Engineers Edge Toward Elusive Goal
Columbia Engineering: Robot Displays a Glimmer of Empathy to a Partner Robot
Yale Magazine: Robotic Theory of Mind
TechXplore: Robot Displays a Glimmer of Empathy to a Partner Robot

Invited Talks

Oct. 2021: Learning the Embodied Self, Others and Beyond. Columbia University.
June 2021: The Boombox: Visual Reconstruction from Acoustic Vibrations. CVPR.
May 2021: Visual Perspective Taking for Opponent Behavior Modeling. ICRA.
May 2021: Smile Like You Mean It: Driving Animatronic Robotic Face with Learned Models. ICRA.
Aug. 2020: Robot Theory of Mind. Columbia Robotics Seminar.
July 2020: Visual Hide and Seek. ALife.
Jan. 2020: Robot Theory of Mind. Jilin University.
April 2019: Robot Theory of Mind. Columbia University.
July 2018: Autostacker: A Compositional Evolutionary Learning System. GECCO.
April 2018: Robotics and Reinforcement Learning. Columbia University.

Students Supervised

Jack Shi	Undergraduate	Robot Furniture Assembly from Instructional Videos	2020–2021
Sara Cummings	Undergraduate	Animatronic Robotic Face	2020
Sunand Raghupathi	Undergraduate	Speech Label Representations	2019–2021
Benjamin Kolber	Undergraduate	Decoding Crystallography with Deep Learning	2019–2021
Yu Li	Masters	Speech Label Representations	2020–2021
Dave Epstein	Undergraduate	Predicting Unintentional Action in Video	2019–2020
Yuhang Hu	Masters	Animatronic Robotic Face	2019–2021
Yehuda Goldfeder	Masters	Continual Learning with Speech Labels	2020–2021
Horus Wu	Masters	Stochastic Video Prediction	2020–2021
Sneha Silwal	Undergraduate	Video Prediction with Graph Neural Nets	2019
Ishaan Chandratreya	Undergraduate	Video Prediction for Dynamical Systems	2019
Yiqing Liang	Masters	Semantic Scene Completion	2020
Pratik Dubal	Masters	Speech to Speech Learning System	2019

James Shin	Undergraduate	Goal-Directed Robot Sound Maker	2019
Margaret Qian	Undergraduate	Motif Discovery for Automatic Machine Learning	2018
Harvey Wu	Undergraduate	Automatic Machine Learning	2018

Academic Services

Reviewer:

ICRA, RA-L, CVPR, ICCV, TPAMI, ICML, NeurIPS, ICLR, GECCO, ALife, WACV