

# Boyuan Chen

Assistant Professor, Duke University

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## Research Interests

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

## Appointments

### **Duke University**

Assistant Professor

2022 – Present

### **Allen Institute for AI**

Research Scientist Intern

June. 2021 – Aug 2021

## Education

### **Columbia University**

Ph.D., Computer Science

Jan. 2018 – June 2022

### **Columbia University**

M.S., Computer Science

Sept. 2016 – Dec 2017

### **University of Manchester**

Undergraduate Thesis, Control System

Jan. 2016 – June 2016

### **Jilin University**

B.S., Biomedical Engineering and Electrical Engineering

Sept. 2012 – June 2016

## Publications

15. Boyuan Chen, Robert Kwiatkowski, Carl Vondrick, Hod Lipson  
Full-Body Visual Self-Modeling of Robot Morphologies  
Accepted at Science Robotics (**Science Robot**), 2022  
[🔗 Project Webpage](#)
14. Yuhang Hu\*, Boyuan Chen\*, Hod Lipson  
EMO1.0: Animatronic Robotic Face with Predictive Facial Expressions  
In preparation at Science Robotics (**Science Robot**), 2022
13. Boyuan Chen, Kuang Huang, Sunand Raghupathi, Ishaan Chandratreya, Qiang Du, Hod Lipson  
Uncovering Neural State Variables from Videos  
Under Review at Nature Computational Science (**Nature Computational Science**), 2022  
[🔗 Project Webpage](#)
12. Boyuan Chen, Mia Chiquier, Hod Lipson, Carl Vondrick  
The Boombox: Visual Reconstruction from Acoustic Vibrations  
Conference on Robot Learning (**CoRL**), 2021  
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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

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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  
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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 (**Nature Scientific Reports**), 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](#)

### Teaching Experience

<b>Computer Vision</b> (Teaching Assistant)	Fall 2018
<b>AI Safety, Ethics and Policy</b> (Teaching Assistant)	Spring 2018
<b>Humanoid Robotics</b> (Teaching Assistant)	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.

Academic Services

Reviewer:

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