Xavier Puig

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Education

PhD in Electrical Engineering and Computer Science   **Cambridge, MA**
Massachusetts Institute of Technology   *2018-2022*
PhD Thesis: VirtualHome: Building Socially Intelligent Agents via Simulation

Supervisor Prof. Antonio Torralba

MSc in Electrical Engineering and Computer Science   **Cambridge, MA**
Massachusetts Institute of Technology   *2016–2018*
Master Thesis: VirtualHome: Simulating Household Activities via Programs
Relevant coursework: Advanced Machine Learning, Advanced Computer Vision, Computational Cognitive Science GPA: 4.9/5.0

Double Degree in Telecommunications Engineering and Computer Science   **Barcelona, Spain**
Universitat Politecnica de Catalunya   *2011–2016*
Thesis: Frames in Places: Visual Common Sense Knowledge in Context

GPA Computer Science: 3.7/4.0, Rank 2/192
GPA Telecommunications Engineering: 3.6/4.0, Rank 2/66

Work Experience

Research Scientist   **San Francisco, CA**
Meta Platforms, Inc   *October 2022–Present*

Developing environments and algorithms to build agents that can assist humans.

Research Intern   **Cambridge, MA**
Google, LLC   *June 2019–August 2019*

Conducted research on combining hard negative mining methods with contrastive learning for unsupervised representation learning in images and videos, under the supervision of Dilip Krishnan.

SWE PhD Intern   **Seattle, WA**
Google, LLC   *June 2017–August 2017*

Conducted research under the Mobile Vision team, exploring adaptive computation neural networks for computer vision under the supervision of Li Zhang.

Research Assistant   **Toronto, Canada**
University of Toronto   *2015–2016*

Developed models for language and video alignment under the supervision of Prof. Sanja Fidler.

Research Assistant   **Cambridge, MA**
Massachusetts Institute of Technology   *2015–2016*

Built an image dataset and designed models for situation recognition in images under the supervision of Prof. Antonio Torralba.

Data Science Intern   **Terrassa, Spain**
Synergic Partners   *2015–2016*
Developed models in R to predict flight purchase propensity.

Refereed Publications

1. Shuang Li, Xavier Puig, Chris Paxton, Yilun Du, Clinton Wang, Linxi Fan, Tao Chen, De-An Huang, Ekin Akyürek, Anima Anandkumar, Jacob Andreas, Igor Mordatch, Antonio Torralba, and Yuke Zhu. Pre-trained language models for interactive decision-making. In Alice H. Oh, Alekh Agarwal, Danielle Belgrave, and Kyunghyun Cho, editors, *Advances in Neural Information Processing Systems*, 2022

2. Ali Jahanian, Xavier Puig, Yonglong Tian, and Phillip Isola. Generative models as a data source for multiview representation learning. In *International Conference on Learning Representations*, 2022

3. Ali Jahanian, Xavier Puig, Yonglong Tian, and Phillip Isola. Generative models as a data source for multiview representation learning. In *International Conference on Learning Representations*, 2022

4. Xavier Puig, Tianmin Shu, Shuang Li, Zilin Wang, Yuan-Hong Liao, Joshua B. Tenenbaum, Sanja Fidler, and Antonio Torralba. Watch-and-help: A challenge for social perception and human-{ai} collaboration. In *International Conference on Learning Representations*, 2021. **Selected as Spotlight.**

5. Yuan-Hong Liao, Xavier Puig, Marko Boben, Antonio Torralba, and Sanja Fidler. Synthesizing environment-aware activities via activity sketches. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, pages 6291–6299, 2019

6. Bolei Zhou, Hang Zhao, Xavier Puig, Tete Xiao, Sanja Fidler, Adela Barriuso, and Antonio Torralba. Semantic understanding of scenes through the ade20k dataset. *International Journal of Computer Vision*, 127(3):302–321, 2019

7. Xavier Puig, Kevin Ra, Marko Boben, Jiaman Li, Tingwu Wang, Sanja Fidler, and Antonio Torralba. Virtualhome: Simulating household activities via programs. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2018. **Selected as Oral.**

8. Bolei Zhou, Hang Zhao, Xavier Puig, Sanja Fidler, Adela Barriuso, and Antonio Torralba. Scene parsing through ade20k dataset. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, pages 633–641, 2017

9. Hang Zhao, Xavier Puig, Bolei Zhou, Sanja Fidler, and Antonio Torralba. Open vocabulary scene parsing. In *2017 IEEE International Conference on Computer Vision (ICCV)*, pages 2021–2029. IEEE, 2017

Non-Refereed Publications

1. Xavier Puig, Tianmin Shu, Joshua B Tenenbaum, and Antonio Torralba. Nopa: Neurally-guided online probabilistic assistance for building socially intelligent home assistants

2. Xavier Puig, Tianmin Shu, Shuang Li, Zilin Wang, Joshua B. Tenenbaum, Sanja Fidler, and Antonio Torralba. Watch-and-help: A challenge for social perception and human-ai collaboration, 2020 **Best paper award.**

Honors and Awards

La Caixa Fellowship Award   **Barcelona, Spain**
La Caixa Fellowship   *2016*
Selected for a fellowship offering full funding for two years of doctoral program.

CFIS Fellowship   **Barcelona, Spain**
Bachelor Thesis Fellowship   *2015*
Selected for a fellowship partially funding one year stay for the bachelor thesis.

National Olympiad in Informatics   **Barcelona, Spain**
Silver Medal   *2009–2011*
5th place in the Spanish National Olympiad in Informatics (2010, 2011) and 8th place in 2009.

Ibero-American Olympiad in Informatics   **Barcelona, Spain**
Bronze Medal   *2009–2011*
Online Olympiad in Informatics involving Ibero-American countries.

Invited Talks

Watch-And-Help: A Challenge or Social Perception and Human-AI Collaboration
ICLR 2021, Austria (Virtual)   *October 2020*

VirtualHome: Simulating Household Activities and Social Intelligence
UC Berkeley, Berkeley   *March 2021*
INRIA, Paris   *November 2020*
Harvard University, Cambridge   *November 2020*
Boston University, Boston   *October 2020*
New York University, New York   *July 2020*

VirtualHome: Simulating Household Activities via Programs
CVPR 2018, Salt Lake City   *June 2018*

Advised Students

Shawn Jain (M. Eng, MIT - Now at OpenAI)   *September 2016 - June 2017*
Zilin Wang (Undergraduate Student, ETH Zurich - Now at ICRC) *August 2019 - December 2019*
Victor Luo (Undergaduate Student, MIT)   *May 2020 - September 2021*
Megan Wei (Undergaduate Student, MIT)   *December 2020 - May 2021*
Irene Huang (Undergaduate Student, MIT)   *December 2020 - May 2021*
Jordan Ren (Undergaduate Student, MIT)   *December 2020 - Current*

Technical Skills

- **Programming Languages and Frameworks:** Proficient in: Python, Tensorflow, PyTorch, C++, Matlab, Javascript. Experience in Theano, Caffe, HTML, C#. Basic Knowledge in Prolog, Haskell.

Languages

- **Catalan**: Native Speaker
- **Spanish**: Native Speaker
- **English**: Proficient. 111 TOEFL iBT (2016) CAE-ESOL (2010).
- **French**: Advanced. DELF B2 (2011).

Professional Activities

- **Conference/Journal Reviewer**: CVPR 2018, 2020; ICCV 2019, 2021 (Outstanding Reviewer); ECCV 2020; NeurIPS 2020, 2021; TVCG; IROS 2021; IRJC 2021.
- **MIT Vision Seminar**: Co-chair of the Computer Vision Seminar at MIT from 2018-2019 and Chair

from 2019-2021.

- o **Teaching Assistant**: Head Teaching Assistant for 6.869 Advances in Computer Vision on Spring 2019.
- o **Robust Vision Challenge Workshop**: Co-organizer of the RVC 2020 workshop, held at ECCV 2020
- o **Social Intelligence Workshop**: Lead organizer of the Social Intelligence in Humans and Robots workshop, at ICRA 2021, RSS 2022.
- o **Social Intelligence Gathering**: Co-organizer of the Social Intelligence Virtual Gathering, at ICLR 2021.
- o **Places Challenge 2017**: Co-organizer of the joint workshop for COCO and Places Challenges at ICCV 2017. With instance parsing, semantic boundary detection and scene parsing tracks
- o **ILSVRC 2016 MIT Scene Parsing Challenge**: Co-organizer of the Scene Parsing Challenge at ILSVRC 2016