





# Dr. Yani A. Ioannou

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## PERSONAL INFORMATION

✉ Toronto, Ontario Canada     0000-0002-9797-5888     <https://yani.ai>  
 yani.ioannou@gmail.com     <https://github.com/yani>

## SUMMARY

- Ph.D. in Computer Vision, University of Cambridge (2018), Microsoft Research PhD Scholarship.
- Published at top conferences in Machine Learning/Computer Vision: NeurIPS, CVPR, ICLR, 3DV.
- Experience at leading industrial research labs: Google Brain, Microsoft Research.
- Extensive teaching experience, as a course lecturer and teaching assistant at four universities.

## EDUCATION

**University of Cambridge**, Cambridge, United Kingdom Nov. 2015 – Oct. 2018

*Ph.D. Information Engineering*, Department of Engineering

- Research Topics: computer vision, efficient deep learning, medical, adversarial examples.
- Microsoft Research Ph.D. Scholarship.
- Supervisors: Prof. Roberto Cipolla, Dr. Antonio Criminisi, Dr. Matthew Brown.
- Thesis: Structural Priors in Deep Neural Networks
- Thesis Examiners: Prof. Andrea Vedaldi (U. Oxford), Prof. Richard Turner (U. Cambridge).

**Queen's University**, Kingston, Ontario, Canada Sept. 2006 – Mar. 2010

*M.Sc. Computing*, School of Computing

- Supervisors: Dr. Michael A. Greenspan, Robin Harrap.
- Research Topics: 3D computer vision, pointclouds.
- Thesis: Segmentation and Object Recognition in Mobile Urban LIDAR Data.

**University of Toronto**, Scarborough, Ontario, Canada Sept. 2000 – May. 2006

*B.Sc. Honours Computer Science Co-op*: Software Engineering Specialist.

- Specialist program is the equivalent of a double major.
- Co-op: 1 year of industry experience (see Professional Experience)

## PROFESSIONAL EXPERIENCE

**Google**, Toronto, Ontario Canada Oct. 7 2019 – Oct. 6, 2020

*Visiting Researcher*, Brain Toronto/AR Core

- Supervisors: Dr. Cem Keskin, Dr. Andrea Tagliasacchi.
- Collaborators: Dr. Yann Dauphin, Utku Evcu.
- Research with Google Brain towards improving the training of sparse neural networks.
- R&D with ARCore improving the efficiency of deep neural networks for AR devices.
- Achieved python 'readability', an internal certification for python style/coding competence.

**NASA/SETI Institute**, Mountain View, California Jul. 2 – Aug. 19 2018

*Invited Researcher*, Frontier Development Lab (FDL)

- Supervisor: Dr. Jeffrey C. Smith, Dr. Douglas Cardwell, Dr. Jon M. Jenkins.
- Collaborators: Dr. Megan Ansdell, Dr. Hugh Osborn, Dr. Michele Sasdelli.
- NASA research accelerator partnering machine learning experts with space scientists.
- Increased the efficacy and yield of exoplanets detection over existing methods.
- Used by NASA to process data from the Transiting Exoplanet Survey Satellite (TESS).

**Wayve Technologies**, Cambridge, United Kingdom Oct. 2017 – Jul. 2018

*Research Scientist*, Imitation Learning

- Research into new imitation learning methods for self-driving cars at a seed-level startup.
- Technology created was critical to Wayve's series-A funding round success.

**Microsoft Research**, Cambridge, United Kingdom

*Student Researcher (Business Guest)*

Dec. 2014 – Sept. 2017

*Research Intern*

Mar. 2014 – Dec. 2014

- Supervisor: Dr. Antonio Criminisi
- Collaborators: Dr. Jamie Shotton, Dr. Dimitrios Vytiniotis, Dr. Duncan Robertson
- Worked with a team of researchers on a 9-month special research project exploring deep learning methods for supervised large scale visual recognition.
- Collaboration for duration of Ph.D. on research in deep learning/computer vision.

**University of Toronto/University Health Network**, Toronto, Ontario Canada *Mar. 2011 – Nov. 2013*  
*Research Associate*, Intelligent Assistive Technology and Systems Lab

- Supervisor: Prof. Alex Mihailidis.
- Led R&D of the Personal Emergency Response System (PERS), a computer vision driven fall detection system prototype, hardware/software implementation of prototypes
- Supervised undergraduate research interns.

**University of Toronto**, Toronto, Ontario, Canada *Sept. 2005 – July 2006*

*Undergraduate Research Assistant*, Department of Computer Science

- Supervisors: Prof. Richard Zemel, Dr. Xuming He, Collaborators: Dr. Volodymyr Mnih.
- Helped collect data for research towards outdoor localization using computer vision.

## PUBLICATIONS

Note: Top-tier conferences are the primary publication venue of computer vision/machine learning, conference papers are full length, peer reviewed, and published in proceedings. NeurIPS/CVPR acceptance is ~20%.

## WORKS SUBMITTED /PRE-PRINT

### **Gradient Flow in Sparse Neural Networks and How Lottery Tickets Win**

*Utku Evci\**, *Yani Ioannou\**, *Cem Keskin*, *Yann Dauphin*

arXiv pre-print: 2010.03533

*Oct. 7th, 2020*

## PEER-REVIEWED PUBLICATIONS

### **Rapid Classification of TESS Planet Candidates with Convolutional Neural Networks**

*Hugh P. Osborn*, *Megan Ansdell*, *Yani Ioannou*, *Michele Sasdelli*, *Daniel Angerhausen*, *Douglas A. Caldwell*, *Jon M. Jenkins*, *Chedy Räissi*, *Jeffrey C. Smith*

*Astronomy & Astrophysics*, Volume 633 (A53)

*Jan. 10th, 2020*

### **Scientific Domain Knowledge Improves Exoplanet Transit Classification with Deep Learning**

*Megan Ansdell*, *Yani Ioannou*, *Hugh P Osborn*, *Michele Sasdelli*, *Jeffrey C Smith*, *Jon M Jenkins*, *Chedy Raissi*, *Daniel Angerhausen*

*Astrophysical Journal Letters*, Volume 869 (1)

*Dec. 5th, 2018*

### **Automated Fall Detection Technology in Inpatient Geriatric Psychiatry**

*Marge Coahran*, *Loretta M Hillier*, *Lisa Van Bussel*, *Edward Black*, *Rebekah Churchyard*, *Iris Gutmanis*, *Yani Ioannou*, *Kathleen Michael*, *Tom Ross*, *Alex Mihailidis*

*Canadian Journal on Aging*, Volume 37 (3)

*Sept., 2018*

### **Deep Roots: Improving CNN Efficiency with Hierarchical Filter Groups**

*Yani Ioannou*, *Duncan Robertson*, *Roberto Cipolla*, *Antonio Criminisi*

30th IEEE Conference on Computer Vision and Pattern Recognition (CVPR)

*Honolulu, Hawaii, USA*

*Jul. 21 – 26, 2017*

### **Measuring Neural Net Robustness with Constraints**

*Osbert Bastani*, *Yani Ioannou*, *Leonidas Lampropoulos*, *Dimitrios Vytiniotis*, *Aditya Nori*, *Antonio Criminisi*

13th Annual Conference on Neural Information Processing Systems (NeurIPS)

*Barcelona, Spain*

*Dec. 5 – 10, 2016*

### **Refining Architectures of Deep Convolutional Neural Networks**

*Sukrit Shankar*, *Duncan Robertson*, *Yani Ioannou*, *Antonio Criminisi*, *Roberto Cipolla*

29th IEEE Conference on Computer Vision and Pattern Recognition (CVPR)

*Las Vegas, Nevada, USA*

*Jun. 27 – 30, 2016*

### **Training CNNs with Low-Rank Filters for Efficient Image Classification**

*Yani Ioannou*, *Duncan Robertson*, *Jamie Shotton*, *Roberto Cipolla*, *Antonio Criminisi*

International Conference on Learning Representations (ICLR) 2016

*San Juan, Puerto Rico*

*May 2 – 4, 2016*

### **Difference of Normals as a Multi-Scale Operator in Unorganized Point Clouds**

*Yani Ioannou*, *Babak Taati*, *Robin Harrap*, *Michael Greenspan*

IEEE International Conference on 3D Imaging, Modelling, Processing, Visualization and Transmission (3DIMPVT)

*Zurich, Switzerland*

*Oct. 13 – 15, 2012*

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\*These authors contributed equally to this paper.

## Local Potential Well Space Embedding

Yani Ioannou, Limin Shang, Robin Harrap, Michael Greenspan

IEEE International Workshop on 3-D Digital Imaging and Modeling (3DIM), IEEE International Conference on Computer Vision

Kyoto, Japan

Oct. 3 – 4, 2009

## PATENTS

### Emergency Detection and Response System and Method

Alex Mihailidis, Babak Tatti, Yani Ioannou, Jennifer Boger, James E. Gastle

United States Patent Application Publication #US2013/0100268 A1

Apr. 25, 2013

## INVITED TALKS

*Structural Priors in Deep Neural Networks*

**Apple, Seattle, WA, USA**

Apple Turi Team

Apr. 23, 2019

*Structural Priors in Deep Neural Networks*

**Google, San Francisco, CA, USA**

Google Daydream/Google Brain

Apr. 15, 2019

*Structural Priors in Deep Neural Networks*

**University of Victoria, Victoria, B.C. Canada**

Department of Computer Science

Apr. 08, 2019

*Structural Priors in Deep Neural Networks*

**Facebook, Menlo Park, CA, USA**

Mobile Computer Vision Group

March. 18, 2019

*Structural Priors in Deep Neural Networks*

**University of British Columbia, Okanagan Campus, Kelowna, B.C. Canada**

Department of Computer Science

Mar. 4, 2019

*Structural Priors in Deep Neural Networks*

**McGill University, Montréal, Canada**

School of Computer Science

Mar. 12, 2018

*Structural Priors in Deep Neural Networks*

**University of Toronto, Toronto, Canada**

Toronto Rehab Journal Club

Aug. 29, 2017

*Restricted Connectivity in Deep Neural Networks*

**Korea Advanced Institute of Science and Technology, Daejeon, South Korea**

Statistical Learning for Signal Processing Lab

Apr. 17, 2017

*Restricted Connectivity in Deep Neural Networks*

**Microsoft Research, Cambridge, UK**

Microsoft Research Cambridge

Mar. 21, 2017

## SHORT PAPERS & WORKSHOPS PRESENTATIONS

### How Different Are Lottery Tickets and the Pruned Solution?

Utku Evci, Yani Ioannou, Cem Keskin, Yann Dauphin

Montreal AI Symposium

Montréal, Québec, Canada

Sept. 11, 2020

### Automatic Classification of Transiting Planet Candidates using Deep Learning

Megan Ansdell, Yani Ioannou, Hugh P Osborn, Michele Sasdelli, Daniel Angerhausen, Douglas A. Caldwell, Jon M. Jenkins, Chedy Räissi, Jeffrey C. Smith

Astronomical Data Analysis Software and Systems XXVIII

University of Maryland, College Park, Maryland, USA

Oct. 11 – 15th, 2020

### The NASA FDL Exoplanet Challenge: Transit Classification with Convolutional Neural Networks

Daniel Angerhausen, Megan Ansdell, Hugh Osborn, Yani Ioannou, Michele Sasdelli, Chedy Räissi, Jeffrey C. Smith, Douglas Caldwell, Jon M. Jenkins

Astrobiology Science Conference

Seattle, Washington, USA

June 28th, 2019

### Segmentation of Brain Tumor Tissues with Convolutional Neural Networks

Darko Zikic, Yani Ioannou, Antonio Criminisi, Matthew Brown

MICCAI workshop on Multimodal Brain Tumor Segmentation Challenge (BRATS)

Boston, Massachusetts, USA

Sept. 14, 2014

### Learning Landmarks for Localization via Manifolds

Xuming He, Volodymyr Mnih, Yani Ioannou, Richard S. Zemel

Neural Information Processing Systems (NeurIPS), Workshop on Machine Learning Based Robotics in Unstructured Environments

Whistler, British Columbia, Canada

Dec. 5 – 10, 2005

## TECHNICAL REPORTS

### Rapid Classification of Exoplanet Transits with Deep Learning

Megan Ansdell, Yani Ioannou, Hugh Osborn, Michele Sasdelli

NASA Frontier Development Lab Technical Memorandum

Aug. 2018

## Decision Forests, Convolutional Networks and the Models in-Between

Yani Ioannou, Duncan Robertson, Darko Zikic, Peter Kotschieder, Jamie Shotton, Matthew Brown, Antonio Criminisi

Microsoft Research Technical Report #2015-58

Apr. 1, 2015

### TEACHING EXPERIENCE

**University of Toronto**, Toronto, Ontario Canada

Dec. 2018 – May. 2019

*Sessional Lecturer*, Department of Computer Science

Course instructor, responsible for lectures, assignments, and exams.

- CSC320 Introduction to Visual Computing (3<sup>rd</sup> year) Winter, 2019.
- Student ratings: “Instructor generated enthusiasm”: 4.4/5, “Instructor created an atmosphere conducive to my learning”: 4.2/5, “Intellectually stimulating”: 4.2/5.

**University of Cambridge**, Cambridge, United Kingdom

Oct. 2016 – Dec. 2017

*Demonstrator*, Department of Engineering

Taught laboratory sessions, marked assignments.

- Part 1B Introduction to C++ (1<sup>st</sup> year) Lent Term 2016, 2017

**University of Bath**, Bath, United Kingdom

Jan. 2013 – Mar. 2013

*Teaching Assistant*, Department of Computer Science

Taught laboratory sessions, marked assignments

- CM10228 Principles of Programming 2 (1<sup>st</sup> year) Semester 2, 2013.

**University of Toronto**, Scarborough, Ontario Canada

Sept. 2000 – Dec. 2008

*Graduate Teaching Assistant*, Dept. Computer and Mathematical Sciences

Taught tutorials, held office hours, marked midterms, exams and assignments

- CSCD27 Computer and Network Security (4<sup>th</sup> year) Fall 2008

**Queen’s University**, Kingston, Ontario Canada

Sept. 2006 – May 2008

*Teaching Assistant*, School of Computing

Taught labs, held office hours, marked midterms and assignments

- CISC452 Neural and Genetic Computing (4<sup>th</sup> year) Fall 2007
- CISC124 Introduction to Computing Science (1<sup>st</sup> year) Spring 2007, 2008
- CISC101 Elements of Computing Science (1<sup>st</sup> year) Fall 2006

**University of Toronto**, Scarborough, Ontario Canada

Sept. 2000 – May. 2005

*Undergraduate Teaching Assistant*, Dept. Computer and Mathematical Sciences

Taught tutorials, held office hours, marked midterms, exams and assignments

- CSCC85 Microprocessor Systems (3<sup>rd</sup> year) Spring 2004, 2005
- CSCB28 File Structures and Data Management (2<sup>nd</sup> year) Spring 2003
- CSCB09 Methods and Tools for Software Development (2<sup>nd</sup> year) Spring 2003
- CSCA58 Introduction to Computer Science (1<sup>st</sup> year) Spring 2002
- CSCA06/A08 Introduction to Computer Programming (1<sup>st</sup> year) Fall 2001 – 2005

### HONOURS AND AWARDS

**Asian Conference on Computer Vision (ACCV)**

2020

*Outstanding Reviewer*

N/A

**Google**

2020

*Signing Bonus*

Undisclosed

**NeurIPS Travel Award**

2016

*Awarded to select students for conference registration.*

\$200

**ICLR Travel Award**

2016

*Awarded to select students for conference expenses.*

\$1500

**Microsoft Research Travel Award**

2016

*Awarded to present MSR collaborative work at CVPR 2016.*

£1200

**Microsoft Research PhD Scholarship**

2013–2017

*One of only 20 awarded annually in Europe, Middle East and Africa.*

Approx. £60,000

**University of Toronto Entrance Scholarship**

2000

*Tuition credit.*

CAD \$2000

**Computer Science Award — Sir Oliver Mowat Collegiate Institute**

2000

*High school award for excellence in computer science.*

CAD \$500

### VOLUNTEER WORK

**Reviewer:** I rarely refuse an opportunity to review recognizing the importance of academic service.

International Conference on Computer Vision and Pattern Recognition (CVPR), European Conference on Computer Vision (ECCV), Asian Conference on Computer Vision (ACCV), Transactions on Pattern Analysis and Machine Intelligence (TPAMI), International Journal of Computer Vision (IJCV)

**Open Source Contributor:** I have contributed to many open source projects, including:  
Linux Kernel – Linux is the operating system used by 19 Million PCs, the 79% of smartphones running Android, and 97% of web servers, including those of Google, Facebook and Amazon.  
Point Cloud Library – Contributed code/tutorials for Difference of Normals.  
Flax – A Google framework for training neural networks using JAX.

**PROFESSIONAL  
MEMBERSHIP**

**IEEE** Prior to the Computer Vision Foundation, the IEEE was responsible for running many of the premier computer vision publication venues. *2005 – 2014*  
**Computer Vision Foundation** A non-profit organization whose purpose is to foster and support research on all aspects of computer vision. Notably runs CVPR and ICCV. *2013 – Present*

**REFERENCES**

Please contact me for a full list of referees.