

# Joseph Boyd

## Deep learning Specialist

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<https://github.com/jcboyd>

### ABOUT

I am a postdoc in MICS lab at CentraleSupélec. Passionate about machine and deep learning. My aim is to put machine learning at the service of science, technology, and health.

### WORK EXPERIENCE

JAN 2021 – PRESENT

CentraleSupélec, France  
**Postdoctoral Researcher**

→ Generative models for histopathology applications.  
Ref: Dr. Vakalopoulou · [maria.vakalopoulou@centralesupelec.fr](mailto:maria.vakalopoulou@centralesupelec.fr)  
→ Teaching assistant/lecturer in VIC - Vision par Ordinateur.

OCT 2016 – JUN 2020

MINES ParisTech / Institut Curie, France  
**Doctoral Researcher**

“Deep learning for computational phenotyping in cell-based assays”  
→ Design and application of deep vision models for the analysis of cancer cell populations in fluorescence microscopy images.  
→ Manuscript: [pastel.archives-ouvertes.fr/tel-02928984](https://pastel.archives-ouvertes.fr/tel-02928984)  
Ref: Dr. Thomas Walter · [thomas.walter@mines-paristech.fr](mailto:thomas.walter@mines-paristech.fr)  
→ Teaching assistant/lecturer in various courses.  
Ref: Dr. Chloé Azencott · [chloe-agathe.azencott@curie.fr](mailto:chloe-agathe.azencott@curie.fr)

FEB 2015 – JUL 2015

CERN, Switzerland  
**Master Thesis Intern**

→ Application of conditional random fields for metadata extraction of PDF articles in the INSPIRE-HEP digital library.  
→ Manuscript: [cds.cern.ch/record/2039361](https://cds.cern.ch/record/2039361)  
Ref: Dr. Gilles Louppe · [g.louppe@uliege.be](mailto:g.louppe@uliege.be)

JUL 2014 – SEP 2014

United Nations ICC, Switzerland  
**Summer Intern**

→ Survey, design and configuration of management “dashboard” using business intelligence (BI) softwares.  
Ref: Mr. Djamel Kacel · [kacel@unicc.org](mailto:kacel@unicc.org)

NOV 2010 – AUG 2013

AECOM, Australia  
**Mathematician**

→ Discrete-event simulation programmer for supply chain systems at *Fortune 500* consultancy firm.  
→ Initiated and presented seminar series to train technical and non-technical colleagues to better use MS Excel and scripting.  
Ref: Mr. Susheel Prabhakar · [susheel.prabhakar@aecom.com](mailto:susheel.prabhakar@aecom.com)

### EDUCATION

2016 – 2020 **Doctor of Philosophy**  
Bioinformatics  
*MINES ParisTech, France*

2013 – 2015 **Master of Science**  
GPA: 5.43(/6)  
Computer Science  
*EPFL, Switzerland*

2007 – 2010 **Bachelor of Science**  
GPA: 6.375(/7)  
Mathematics / IT  
*QUT, Australia*

### TEACHING

NOV 2022 – MARCH, 2023 · CentraleSupélec · *VIC - Vision par Ordinateur* · TA

DEC 2021 – MARCH, 2022 · CentraleSupélec · *VIC - Vision par Ordinateur* · TA

OCT 2019 · Paris Sciences & Lettres · *Génomique et Bioinformatique: Une Introduction* · Guest Lecturer

NOV 2018 · MINES ParisTech · *Deep Learning For Image Analysis* · TA

NOV 2018 · Paris Sciences & Lettres · *Génomique et Bioinformatique: Une Introduction* · TA

MAR 2018 · MINES ParisTech · *Large-Scale Machine Learning and Data Mining* · TA

OCT 2017 · Paris Sciences & Lettres · *Génomique et Bioinformatique: Une Introduction* · Guest Lecturer

OCT 2017 – JAN 2018 · CentraleSupélec · *Introduction to Machine Learning* · TA

### PUBLICATIONS

Fillioux, L., Boyd, J. et al. (2023) **Structured State Space Models for Multiple Instance Learning in Digital Pathology** (submitted)

Boyd, J. et al. (2022). **Region-guided CycleGANs for Stain Transfer in Whole Slide Images** *MICCAI 2022*.

Boyd, J. et al. (2021). **Self-Supervised Representation Learning using Visual Field Expansion on Digital Pathology**. In *Proceedings of the IEEE/CVF International Conference on Computer Vision*.

Boyd, J. (2020). **Deep learning for computational phenotyping in cell-based assays.** *PhD Thesis, MINES Paristech, Paris.*

Boyd, J. et al. (2020). **Experimentally-generated ground truth for detecting lymphocytes in an image-based immunotherapy screen.** *In 2020 IEEE 17th International Symposium on Biomedical Imaging (ISBI 2020). IEEE.*

Boyd, J. C. et al. **Domain-invariant features for mechanism of action prediction in a multi-cell-line drug screen.** *Bioinformatics.*

Naylor, Boyd et al. (2019). **Predicting residual cancer burden in a triple negative breast cancer cohort.** *16th International Symposium on Biomedical Imaging.*

Khalfaoui, B., Boyd, J., & Vert, J. P. (2019). **Adaptive structured noise injection for shallow and deep neural networks.**

Boyd, J. et al. (2018). **Analysing double-strand breaks in cultured cells for drug screening applications by causal inference..** *In 2020 IEEE 15th International Symposium on Biomedical Imaging (ISBI 2020). IEEE.*

Boyd, J. (2015). **Automatic Metadata Extraction-The High Energy Physics Use Case** (Masters dissertation, Ecole Polytechnique, Lausanne)

For a complete list see my Google Scholar page:  
[scholar.google.com/citations?user=fvzFcqYAAAAJ](https://scholar.google.com/citations?user=fvzFcqYAAAAJ)

## AWARDS

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**Second Best Paper Award** at ICCV Workshop CDpath for *Self-Supervised Representation Learning using Visual Field Expansion on Digital Pathology*

QUT Dean's List Award 2008, QUT Head of School's Award for Excellence in Mathematics 2008, and QUT Dean's Merit Award 2008, 2009, and 2010.

## SKILLS

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CODING	PYTHON, C++, MATLAB, BASH, SQL
PYTHON	NumPy, pandas, sklearn, skimage, TensorFlow, Keras, PyTorch
MACHINE LEARNING	Linear models, random forests, clustering, dim. reduction
DEEP LEARNING	CNNs, RNNs, R-CNN, GANs, segmentation, style transfer object detection, image synthesis
DEVOPS	Docker, git, conda
TYPESETTING	MS Suite, L <sup>A</sup> T <sub>E</sub> X
SOFT SKILLS	Autonomy, teamwork, writing, teaching, presenting
LANGUAGES	English (native), French