# 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
→ 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
Ref: Dr. Thomas Walter · thomas.walter@mines-paristech.fr
→ Teaching assistant/lecturer in various courses.
Ref: Dr. Chloé Azencott · 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
Ref: Dr. Gilles Louppe · 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

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

## 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 - Introduction to Computer Vision* · TA

DEC 2021 – MARCH, 2022 · **CentraleSupélec** · *VIC - Introduction to Computer Vision* · TA

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

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

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

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*.

Dahan, C., Boyd, J. (2022). **Artifact Removal in Histopathology Images** *ACML 2022, ML4MI workshop*.

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

## AWARDS

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, LaTeX |
| SOFT SKILLS | Autonomy, teamwork, writing, teaching, presenting |
| LANGUAGES | English (native), French |