

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 - 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

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

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 ^A T _E X
SOFT SKILLS	Autonomy, teamwork, writing, teaching, presenting
LANGUAGES	English (native), French