

# Guillaume Jaume, P.hD.

☎ +1-(617)-251-4089 ✉ [gjaume@bwh.harvard.edu](mailto:gjaume@bwh.harvard.edu) in [guillaume-jaume](#) 📄 [Guillaume Jaume](#) 🌐 [guillaumejaume](#)

## RESEARCH INTERESTS

---

*“You are cancer-free”* – these words are the outcome of a long clinical process that draws on the expertise of a team of pathologists and oncologists whose knowledge has been shaped by years of research in biology. Despite considerable progress, many questions remain unanswered, with high hopes that artificial intelligence will catalyze further discoveries. In this context, my work focuses on answering two questions: *How can we develop universal, actionable, and transferable AI models for pathology?*, and *How can we effectively leverage these models for diagnosis, prognosis, treatment response prediction, and biomarker discovery?*

## WORK EXPERIENCE

---

- **Harvard Medical School, Boston, United States** May 2022 –  
Post-doctoral research fellow, Mahmood Lab – Brigham and Women’s Hospital  
*Focus:* AI for pathology: foundation models, cancer diagnosis and prognosis, drug safety  
*Collaborators:* MIT, ETH, EPFL
- **IBM Research, Zurich, Switzerland** Dec 2017 - Feb 2022  
Pre-doctoral researcher in the Cognitive Healthcare & Life Sciences group  
*Focus:* Computational pathology, Graph representation learning  
*Collaborators:* ETH, Mayo Clinic, CHUV, University Hospital of Zurich, University Hospital of Paris
- **EPFL, Lausanne, Switzerland** 2013 - 2016  
Teaching Assistant for multiple bachelor and master courses  
*Focus:* Supervise students in practicals, projects, and labs
- **CERN, Geneva, Switzerland** June 2015 - Aug 2015  
CERN Summer Student Program, High-Luminosity Large Hadron Collider  
*Team:* High-Luminosity Large Hadron Collider

## EDUCATION

---

- **Ph.D. in Electrical Engineering** Jan 2018 - Jan 2022  
EPFL, Lausanne, Switzerland  
*Thesis:* Graph Representation Learning in Computational Pathology  
*Advisors:* Prof. Jean-Philippe Thiran; Dr. Maria Gabrani
- **Special student in Computer Science** Jan 2018 - Jan 2021  
ETH, Zurich, Switzerland
- **M.Sc. in Electrical Engineering** Sep 2015 - Sep 2017  
EPFL, Lausanne, Switzerland  
*Thesis:* A Cognitive Solution to Extract and Understand Information in Medical Forms
- **Erasmus exchange, Electrical & Computer Engineering** Sep 2014 - June 2015  
Heriot-Watt University, Edinburgh, United Kingdom
- **B.Sc. in Electrical Engineering** Sep 2012 - June 2015  
EPFL, Lausanne, Switzerland

## AWARDS

---

- Nominated for the EPFL Doctorate Award *Jan 2022*
- IBM Outstanding Technical Achievement and Innovation Award  
“Intelligent and quantitative immunostaining of tumor tissue sections” *May 2021*
- IBM First Invention Plateau *June 2021*
- **Best Paper Awards:**
  - MICCAI, Computational Pathology (COMPAY) Workshop *Sep 2021*
  - MICCAI, Graphs in Biomedical Image Analysis Workshop *Oct 2020*
  - ICML, Computational Biology Workshop *July 2020*

## TEACHING

---

- **Teaching Assistant:**
  - Circuits and Systems II – EE-205, EPFL *Spring 2016*
  - Circuits and Systems I – EE-111, EPFL *Fall 2015 & Fall 2016*
  - Advanced Wireless Receivers – EE-543, EPFL *Spring 2016*
  - Wireless Receivers – EE-442, EPFL *Fall 2015*
  - Object-Oriented Programming – COM-112, EPFL *Spring 2014*
  - Introduction to Programming, EPFL *Fall 2013*
- **Lecturer:**
  - Introduction to Computational Pathology – 6.S915, MIT, *Boston* *Jan 2024*
  - AI4Health Summer School, *Paris* *July 2023*
  - Applied Machine Learning Days (AMLD), *Lausanne* *April 2021*

## SOFTWARE & DATASETS

---

- **HEST-1k**: The largest collection to date of Spatial Transcriptomics paired with H&E-stained whole-slide images and metadata [[Code & Data](#)]
- **HistoCartography**: A collection of image-to-graph translation and state-of-the-art graph algorithms for facilitating interpretable entity-based analysis in digital pathology [[Code](#)]
- **BR<sub>e</sub>Ast Carcinoma Subtyping (BRACS)**: A large cohort of H&E stained histopathological images for automated breast cancer diagnosis [[Website](#)]
- **FUNSD**: A dataset for Form Understanding in Noisy Scanned Documents [[Website](#)]

## PATENTS

---

- F. Mahmood, **G. Jaume**, “Novel Computational Models For Drug Toxicity Assessment”, 2024
- A. Foncubierta-Rodriguez, P. Pati, **G. Jaume**, K. Thandiackal, “Processing multimodal images of tissue for medical evaluation,” 2022
- P. Pati, **G. Jaume**, K. Thandiackal, A. Foncubierta-Rodriguez, M. Gabrani, “Registration Free Multimodal Digital Pathology,” 2021
- P. Pati, **G. Jaume**, A. Foncubierta-Rodriguez, M. Gabrani, “Interpretation of whole-slide images in digital pathology,” 2021
- **G. Jaume**, A. Foncubierta-Rodriguez, M. Gabrani, “Extracting structured information from a document containing filled form images,” 2019
- **G. Jaume**, A. Foncubierta-Rodriguez, M. Gabrani, “Method and system for extracting information from an image of a filled form document,” 2019

## PUBLICATIONS

---

### Journals:

- A. Song et al., “Analysis of 3D pathology samples using weakly supervised AI,” **Cell**, 2024
- A. Vaidya et al., “Examining Demographic Bias in Misdiagnosis by AI-Driven Computational Pathology Models,” **Nature Medicine**, 2024
- M. Lu et al., “A Visual-Language Foundation Model for Computational Pathology,” **Nature Medicine**, 2024
- R. Chen et al., “Towards a General-Purpose Foundation Model for Computational Pathology,” **Nature Medicine**, 2024
- **G. Jaume\*** et al., “Artificial Intelligence for Computational and Digital Pathology,” **Nature Reviews Bio-engineering**, 2023
- **G. Jaume\*** et al., “Weakly Supervised Learning for Joint Whole-Slide Segmentation and Classification in Prostate Cancer,” **Medical Image Analysis**, 2023
- **G. Jaume\*** et al., “Hierarchical Graph Representations in Digital Pathology,” **Medical Image Analysis**, 2021

### In review:

- **G. Jaume\*** et al., “Molecular-Driven Foundation Model for Pathology,” 2024 [Journal]
- **G. Jaume** et al., “Deep Learning-based Modeling for Preclinical Drug Safety Assessment,” 2024 [Journal]
- **G. Jaume\*** et al., “AI-driven Discovery of Morphomolecular Signatures in Toxicology,” 2024 [Journal]
- S. Sahai et al., “Guiding Multi-Instance Electron Microscopy Representations with Natural Language,” 2024 [Conference]

### Peer-reviewed conferences:

- **G. Jaume\*** et al., “HEST-1k: A Dataset Integrating Spatial Transcriptomics and Histology Image Analysis,” **NeurIPS, Spotlight (Top 2% of submissions)**, 2024
- **G. Jaume\*** et al., “Multistain Pretraining for Slide Representation Learning in Pathology,” **ECCV**, 2024
- A. Song et al., “Multimodal Prototyping for cancer survival prediction,” **ICML**, 2024
- **G. Jaume\*** et al., “Transcriptomics-guided Slide Representation Learning in Computational Pathology,” **CVPR, Oral (Top 0.7% of submissions)**, 2024
- **G. Jaume\*** et al., “Modeling Dense Multimodal Interactions Between Biological Pathways and Histology for Survival Prediction,” **CVPR**, 2024
- A. Song et al., “Morphological Prototyping for Unsupervised Slide Representation Learning in Computational Pathology,” **CVPR**, 2024
- K. Thandiackal et al., “Differentiable Zooming for Multiple Instance Learning on Whole-Slide Images,” **ECCV**, 2022
- **G. Jaume\*** et al., “Quantifying Explainers of Graph Neural Networks in Computational Pathology,” **CVPR**, 2021
- **G. Jaume\*** et al., “Learning Whole-Slide Segmentation from Inexact and Incomplete Labels using Tissue Graphs,” **MICCAI**, 2021

---

\* denotes co-first authorship

## Book chapters:

- **G. Jaume\*** et al., “Graph Representation Learning & Explainability in Breast Cancer Pathology: Bridging the gap between AI and Pathology Practice,” *Artificial Intelligence as applied in Human Pathology*, Editor: R. Huss, World Scientific, 2021

## Additional publications:

- S. Sahai et al., “BKVision: Automated Detection and Morphological Analysis of BK Virus in Renal Transplant Biopsies,” 2024 [Conference]
- **G. Jaume** et al., “Incorporating Context for Superior Cancer Prognosis,” **Nature Biomedical Engineering, News and Views**, 2022
- **G. Jaume\***, et al., “Embedding Space Augmentation for Weakly Supervised Learning in Whole-Slide Images,” **ISBI**, 2022
- N. Brancati et al., “BRACS: A Dataset for BReAst Carcinoma Subtyping in H&E Histology Images,” **Databases**, 2022
- **G. Jaume\*** et al., “HistoCartography: A Toolkit for Graph Analytics in Digital Pathology,” **MICCAI-W**, 2021 (*Best Software Paper Award*)
- **G. Jaume\*** et al., “HACT-Net: A Hierarchical Cell-to-Tissue Graph Neural Network for Histopathological Image Classification,” **MICCAI-W**, 2020 (*Best paper award*)
- **G. Jaume\*** et al., “Towards Explainable Graph Representations in Digital Pathology,” **ICML-W**, 2020 (*Best paper award*)
- **G. Jaume** et al., “edGNN: A simple and powerful GNN for labeled graphs,” **ICLR-W**, 2019
- **G. Jaume** et al., “Image-Level Attentional Context Modeling Using Nested-Graph Neural Networks,” **NeurIPS-W**, 2018

## COMMUNITY OUTREACH

---

### • Reviewer:

- *Journals*: Nature Communications, IEEE Transactions on Medical Imaging, Science Translational Medicine, Medical Image Analysis, British Journal of Cancer, GigaScience, NPJ Precision Oncology, NPJ Breast Cancer
- *AI/CV Conferences*: CVPR, ECCV, MICCAI

### • Workshop co-organizer:

- IEEE International Symposium on Biomedical Imaging (ISBI), *Kolkata* *March 2022*  
“BRIGHT: BReast tumor Image classification on Gigapixel Histopathological images”
- American Medical Informatics Association (AMIA), *San Diego* *Nov 2021*  
“Workshop on Explainable Multimodal AI in Cancer Patient Care”

### • Selected talks:

- Lunit, *Seoul* – Invited by Dr. Sergio Pereira *Sep 2024*  
“Multimodal Representation Learning in AI for Pathology”
- Roche, *Basel* – Invited by Dr. Kevin Thandiackal *Aug 2024*  
“AI for Preclinical Drug Safety Assessment”
- UniBe, *Bern* – Invited by Prof. Inti Zlobek *May 2024*  
“3D Computational Pathology: Towards Enhanced Patient Prognostication”
- CHUV, *Lausanne* – Invited by Prof. Raphael Gottardo *May 2024*  
“Towards General-Purpose AI Models for Histology”

- PariSanté Campus, *Paris* – Keynote speaker, AI4Health Summer School  
“Deep Learning for Pathology Image Analysis” *July 2023*
- University of Bern, *Bern* – Invited by Prof. Inti Zlobek  
“Latest trends in Computational Pathology” *July 2023*
- UC Berkeley, *Berkeley* – Invited by Prof. Iain Carmichael  
“A Tour of Computational Pathology: Methods and Applications” *Nov 2022*
- Dana-Farber Cancer Institute, *Boston* – Invited by Prof. Eliezer Van Allen  
“Interpretable Deep Learning in Computational Pathology” *Sep 2022*
- Tissue Image Analytics Centre, *Warwick* – Invited by Prof. Nasir Rajpoot  
“HistoCartography: Graph representations and models in Computational Pathology” *Oct 2021*
- Charité University Hospital, *Berlin*  
“Graph Representations and Models in Digital Pathology” *Oct 2021*
- PathAI, *New York*  
“Weakly-Supervised Learning for Whole-Slide-Image Segmentation” *July 2021*
- Harvard Medical School, *Boston* – Invited by Prof. Faisal Mahmood  
“A Graph Network Tour of Computational Pathology” *July 2021*
- Lausanne University Hospital (CHUV), *Lausanne*  
“Computational Pathology: Building Interpretable AI at Scale” *May 2021*
- Swiss Digital Pathology Consortium (SDiPath), *Bern*  
“Graph Representation Learning & Explainability in Computational Pathology” *Jan 2021*
- Computer Research Institute of Montreal (CRIM), *Montreal*  
“Deep Learning on Graphs: An Overview” *Nov 2020*

## STUDENT SUPERVISION

- 
- Lucia Pancorbo Fernandez, *Master's thesis – ETH Zurich*  
“Revisiting Panoptic Segmentation in Computational Pathology” *Fall 2024*
  - Isabella Polles, *PhD internship – Politecnico Milano*  
“Expression-guided Representation Learning of Histology Images” *Spring 2024*
  - Paul Doucet, *Master's thesis – ETH Zurich*  
“A Dataset for Pan-tissue Morphological and Molecular Analysis” *Spring 2024*
  - Thomas Peeters, *Master's thesis – EPFL* (ML engineer at BioOptimus)  
“Understanding Morphomolecular Signatures in Drug Safety Studies” *Spring 2023*
  - Lukas Oldenburg, *Master's thesis – RWTH Aachen University* (ML engineer at OmicVision) *2023*  
“Aligning Transcriptomics and Histology for Few-Shot Learning in Computational Toxicologic Pathology”
  - Imaad Zaafar, *Summer internship – UCL* (Software engineer at Bloomberg) *Summer 2022*  
“Embedding Space Augmentation with Generative Models”
  - Valentin Anklin, *Master's thesis – ETH Zurich* (Gemini Team at Google) *Autumn 2020*  
“Learning Segmentation in Histology from Inexact and Incomplete Labels using GNNs”
  - Lauren Alisha Fernandez, *Master's thesis – ETH Zurich* (ML engineer) *Autumn 2019*  
“Cell-graph Networks for Representation and Grading of Histopathology Images”
  - Atul Kumar, *Master's thesis – EPFL* (PhD candidate at UniGe) *Autumn 2019*  
“Learning to generate Scene Graphs from Images and vice-versa”
  - Maria Halushko, *Research internship – Uni Kyiv* (Software engineer at AWS) *Autumn 2018*  
“Text Detection in Noisy Scanned Documents”