

# Juba NAIT SAADA

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## Education

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### University of Oxford

Oxford, UK

DOCTOR OF PHILOSOPHY IN STATISTICS, DEPT. OF STATISTICS, BALLIOL COLLEGE

2018 - 2022

- Supervisor: Professor Pier Palamara.
- Conducting research in Deep Learning for genomics.
- Leveraging Deep Neural Networks for pairwise coalescence times and genomic variants ages prediction.

### University of Oxford

Oxford, UK

MASTER OF SCIENCE BY RESEARCH IN STATISTICS, DEPT. OF STATISTICS, ST CROSS COLLEGE

2017 - 2018

- Supervisor: Professor Pier Palamara.
- Thesis title: "Fast and accurate detection of Identical-By-Descent segment sharing in large genomic datasets."
- Focused on Stochastic Models, Bayes Methods, Graphical Models, Statistical Programming, Deep Learning.

### Télécom ParisTech

Paris, France

MASTER OF ENGINEERING IN DATA SCIENCE AND COMPUTER SCIENCE, GPA: 3.99/4.00

2015 - 2017

- Focused on Machine Learning and Intelligent System, Advanced Statistical Inference, Operating Systems, Algorithmic Machine Learning, Software Development, Programming Languages, Digital Architectures and Processors.

### Lycée Saint-Louis

Paris, France

BACHELOR OF SCIENCE IN MATHEMATICS, PHYSICS AND ENGINEERING SCIENCE, GPA: 4.00/4.00

2013 - 2015

- Two-year undergraduate intensive courses preparing for admission to French Engineering Grandes Ecoles.

## Publications

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### PUBLISHED

**J. Nait Saada**, A. Hu, P. F. Palamara. Inference of pairwise coalescence times and allele ages using deep neural networks. *In Proceedings of NeurIPS Workshop (LMRL)*, 2021.

**J. Nait Saada**, G. Kalantzis, D. Shyr, F. Cooper, M. Robinson, A. Gusev, P. F. Palamara. Identity-by-descent detection across 487,409 British samples reveals fine scale population structure and ultra-rare variant associations. *Nature Communications*, 26711(1):6130, 2020.

## Work Experience

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### Amazon

London, UK

APPLIED SCIENTIST

Jan. 2023 - present

- Machine Learning for Amazon Transportation Services.

### BenevolentAI

London, UK

ADVANCED AI SCIENTIST

Sept. 2022 - Dec. 2022

- Machine Learning for drug discovery.

### Amazon Web Services (AWS)

Paris, France

APPLIED SCIENTIST INTERN

May 2022 - Sept. 2022

- Research in Time-Series forecasting.

## Research Experience

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### Institute for Infocomm Research - A\*STAR

Singapore

Co-ADVISORS: DR. FOO CHUAN SHENG, DR. VIJAY CHANDRASEKHAR

July. 2018 - Sept. 2018

- Developed a deep learning framework to incorporate prior knowledge for multi-label classification based on Conditional Random Fields.
- Worked on RNA modifications detection based on a deep learning model achieving end-to-end basecalling.

### University of Oxford - Department of Statistics

Oxford, UK

Co-ADVISORS: PROFESSOR ALEXANDER (SASHA) GUSEV, PROFESSOR PIER PALAMARA

2017-2020

- Developed a method for Identical-By-Descent segments detection, chromosomal segments that are shared among two individuals due to common ancestry and applied it to 487,409 UK Biobank samples, revealing fine-scale population structure, recent evolutionary history and pathogenic variation. Work published in *Nature Communications*.

### Télécom ParisTech

Paris, France

ADVISOR: PROFESSOR JEAN-CLAUDE DUFOURD

2015-2016

- Developed an Android app and a Java Web Application based on geolocation to share music with people all around the world.

### Lycée Saint-Louis

Paris, France

Co-ADVISORS: ELISABETH EHRHARD, DR. LAURENT TROMP

2014-2015

- Built a pot-in-pot refrigerator for the oral test at the entrance exams of "Grandes Ecoles".
- Developed a theoretical model of an evaporating cooling refrigeration device without electricity, based on heat transfer.

## Teaching Experience

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2019-2022 **Lecturer in Mathematics**, Hertford College, University of Oxford

- Oxford tutorials for second years undergraduate students in Probability and Statistics.
- Interviewer for Oxford undergraduate admissions in Mathematics.
- Setting, invigilating, and marking internal College examinations ("Collections").

2019-2022 **Lecturer in Mathematics**, Balliol College, University of Oxford

- Oxford tutorials for second years undergraduate students in Probability and Statistics.
- Setting, invigilating, and marking internal College examinations ("Collections").

2018-2021 **Tutor in Statistical Machine Learning**, Department of Statistics, University of Oxford

- Intercollegiate third year undergraduate classes.

2017-2019 **Graduate Teaching Assistant in Statistics**, Department of Statistics, University of Oxford

- Demonstrator for practicals on various statistical topics (e.g Generalized Linear Model, Computational Statistics, Machine Learning, Bayesian Inference).
- Helped students enrolled in the MSc in Statistical Science to solve statistical programming exercises.

2016-2017 **Graduate Teaching Assistant in Mathematics**, Lycée Stanislas, Cannes, France

- Taught subjects such as Algebra, Probability and Analysis to prepare students in the Economics section of the Preparatory Classes for admission to French Business Grandes Ecoles.

## Presentations

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### INVITED TALKS

March 2021 **Third Year Lightning talks**, Departments of Statistics, University of Oxford

*Identity-by-descent detection across 487,409 British samples reveals fine scale population structure and ultra-rare variant associations.* Online talk due to the COVID-19 pandemic.

July 2020 **Invited speaker at The Pritchard Lab**, Departments of Genetics and Biology, Stanford University

*Identity-by-descent detection across 487,409 British samples reveals fine scale population structure and ultra-rare variant associations.* Online talk due to the COVID-19 pandemic.

June 2020 **Plenary Session - European Society of Human Genetics**, ESHG Conference

*What's New? Highlight Session.* One of 5 (out of ~2,800 submissions) abstracts selected for the Plenary Session. Online talk due to the COVID-19 pandemic.

- Oct. 2019 **Platform Session - American Society of Human Genetics**, ASHG Conference  
*Methods and Resources in Large-scale Population Data*. Top 8% of the abstracts selected for the Platform (oral) presentation. Houston, TX, United States.

## POSTERS

- March 2020 **Second Year Graduate Poster session**, Departments of Statistics, University of Oxford  
*Identity-by-descent detection across 487,409 British samples reveals fine scale population structure and ultra-rare variant associations*. Oxford, United Kingdom.
- Oct. 2018 **American Society of Human Genetics**, ASHG Conference  
*Fast model-based detection of identity-by-descent*. San Diego, CA, United States.

## Awards & Fellowships

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- 2020 **Fellowship of Excellence for Young Investigator Award**, European Society of Human Genetics  
**Second Year Poster Prize**, Department of Statistics, University of Oxford
- 2019 **Epstein Trainee Award Semifinalist for Excellence in Human Genetics Research**, American Society of Human Genetics  
**Oxford-MRC Doctoral Training Partnership supplementary funding**, Medical Sciences Division, University of Oxford
- 2018 **Singapore International Pre-Graduate Award (SIGPA)**, Institute for Infocomm Research, A\*STAR  
**MRC Industrial Strategy Studentship**, Medical Research Council  
**Balliol Jowett Scholarship**, Balliol College, University of Oxford  
**EPSRC Scholarship**, Engineering and Physical Sciences Research Council
- 2016 **Patronage of Mr. Philippe Le May**, Télécom ParisTech

## Outreach & Professional Development

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### PEER REVIEW

**Bioinformatics**  
**Genome Biology**