

# Daniel Robert-Nicoud, Ph.D.

*Curriculum Vitae*

## PERSONAL DETAILS

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*Birth* March 4, 1991  
*Nationality* Swiss and French  
*Domicile* Zürich, Switzerland  
*Email* [daniel.robertnicoud@gmail.com](mailto:daniel.robertnicoud@gmail.com)

## WORK EXPERIENCE

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**Laval Science** Jul. 2021 – Now  
*Data Scientist*

Quantitative research and development of algorithmic trading strategies (with focus on high-frequency trading), including researching and prototyping state-of-the-art machine learning models.

**Foresight Works** Jan. 2021 – Jun. 2021  
*Data Science Consultant*

Data scientist developing software and data driven solutions for the management of construction mega-projects.  
Position held simultaneously to and independently from my employment at UBS.

**UBS — Credit Risk Methodology** Oct. 2018 – Jun. 2021  
*Associate Director* Mar. 2021 – Jun. 2021

Machine learning specialist for credit risk. Full stack development of quantitative risk models, including stakeholder interactions, data sourcing, data analysis using machine learning techniques, model implementation, and model maintenance. Lead developer for various PD and LGD models on Swiss portfolios covering a total exposure of more than 300bn CHF.

*Quantitative Risk Modeler* Oct. 2018 – Feb. 2021

Machine learning specialist for credit risk. Development and maintenance of Loss Given Default (LGD) and Probability of Default (PD) models for credit risk, mathematical modeling, and development of machine learning protocols in the context of credit decisions.

## EDUCATION

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**PhD in Mathematics** Sep. 2015 – Aug. 2018  
*Université Sorbonne Paris Nord (Paris)*

Under the supervision of Prof. Dr. Bruno Vallette. Defended the 22nd June 2018. See scientific annex for details.

**BSc & MSc in Mathematics** Sep. 2010 – Oct. 2015  
*ETHZ (Zurich)*

Graduated with distinction and awarded the Willi Studer Prize 2016 for mathematics.

## SKILLS

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<i>Languages</i>	Italian (mother tongue) French (mother tongue) English (fluent) German (good)
<i>Software</i>	MS Office, L <sup>A</sup> T <sub>E</sub> X
<i>Programming</i>	Python 3, Scala, Spark, SQL, SAS Basic knowledge of Java, Julia
<i>Versioning</i>	Git

## AWARDS

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**Willi Studer Prize** **2016**  
*ETHZ (Zurich)*

## DEVELOPED SOFTWARE

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`dupont-contraction` A Python package for calculations in algebraic topology.

## ADDITIONAL CERTIFICATIONS

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**Functional Programming in Scala Specialization** **Jun. 2021**  
*Coursera*

## HOBBIES

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<i>Sports</i>	Martial arts, bouldering
<i>Other</i>	Academic research, dancing

# Daniel Robert-Nicoud

*Scientific Annex*

## **PUBLICATIONS**

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### **Homotopy morphisms between convolution homotopy Lie algebras**

Daniel Robert-Nicoud and Felix Wierstra

*Journal of Noncommutative Geometry* 13(4):1435–1462, 2019

Can also be found at [arXiv:1712.00794](https://arxiv.org/abs/1712.00794)

### **Representing the deformation $\infty$ -groupoid**

Daniel Robert-Nicoud

*Algebraic & Geometric Topology* 19(3):1453–1476, 2019

Can also be found at [arXiv:1702.02529](https://arxiv.org/abs/1702.02529)

### **Convolution algebras and the deformation theory of infinity-morphisms**

Daniel Robert-Nicoud and Felix Wierstra

*Homology, Homotopy and Applications* 21(1):351–373, 2019

Can also be found at [arXiv:1806.03371](https://arxiv.org/abs/1806.03371)

### **A model structure for the Goldman–Millson theorem**

Daniel Robert-Nicoud

*Graduate Journal of Mathematics*, 3(1):15–30, 2018

Can also be found at [arXiv:1803.03144](https://arxiv.org/abs/1803.03144)

### **Deformation theory with homotopy algebra structures on tensor products**

Daniel Robert-Nicoud

*Documenta Mathematica*, 23:189–240, 2018

Can also be found at [arXiv:1702.02194](https://arxiv.org/abs/1702.02194)

## **PREPRINTS**

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### **Higher Lie theory**

Daniel Robert-Nicoud and Bruno Vallette

Preprint (2020).

Can be found at [arXiv:2010.10485](https://arxiv.org/abs/2010.10485)

### **Lie, associative, and commutative quasi-isomorphism**

Ricardo Campos, Dan Petersen, Daniel Robert-Nicoud, and Felix Wierstra

Preprint (2019).

Can be found at [arXiv:1904.03585](https://arxiv.org/abs/1904.03585)

## PHD THESIS

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### Operads and Maurer–Cartan spaces

Daniel Robert-Nicoud, under the supervision of Prof. Dr. Bruno Vallette at Université Sorbonne Paris Nord. Defended the 22nd of June 2018.

Can be found at [arXiv:1807.02129](https://arxiv.org/abs/1807.02129)

## ORGANIZED CONFERENCES AND WORKSHOPS

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### Workshop on Persistent Homology

11–13 Jul. 2017

*University of Montpellier*

This workshop covered the basic theory and applications of persistent homology and topological data analysis.

## TEACHING

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<i>Lecturer</i>	Linear algebra 2 (Sorbonne Paris Nord)	Fall 2017
	Linear algebra 2 (Sorbonne Paris Nord)	Fall 2016
	Intro. to Math. Structures (Sorbonne Paris Nord)	Fall 2015
<i>TA</i>	Applied Credit Risk Modeling (UZH)	Spring 2021
	Applied Credit Risk Modeling (UZH)	Spring 2020
	Applied Credit Risk Modeling (UZH)	Spring 2019
	Analysis 2 (Sorbonne Paris Nord)	Spring 2018
	Linear algebra for engineers (Sorbonne Paris Nord)	Spring 2017
	Analysis 2 (ETHZ)	Spring 2015
	Topology (ETHZ)	Fall 2013
Complex Analysis (ETHZ)	Fall 2012	