

# LÊ NGUYỄN HOANG

CEO of Calicarpa, President of Tournesol, Content creator of Science4All

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## CURRENT JOBS

Co-founder and CEO

Calicarpa

July 2023 – Ongoing Switzerland

Calicarpa provides cybersecurity software solutions. We also propose conferences, consulting and training, to accompany (mostly) large companies to secure their AI integration.

Co-founder and President

Tournesol

April 2021 – Ongoing Switzerland

Tournesol is a nonprofit association that develops the Tournesol web platform, which proposes a collaborative and secure content recommendation system. I am also the main designer of the secure algorithms of Tournesol, with a particular focus on proving their mathematical guarantees.

Member of the Data and AI Ethics Committee

Orange

March 2021 – Ongoing France

Orange is France's largest telecommunication company.

Science Communicator

Science4All, public speaker and writer

February 2016 – Ongoing Switzerland

I run alone the science YouTube channel Science4All, give public talks, appear in media and write books.

## PAST EXPERIENCE

Researcher

DCL, EPFL

August 2020 – July 2022 Switzerland

I introduced new algorithms to secure machine learning, while proving fundamental impossibilities of secure high-dimensional machine learning.

Science communicator

EPFL

August 2016 – July 2022 Switzerland

I produced videos on multiple channels: Wandida for teaching, ZettaBytes for researchers' interviews and Étincelles for middle and high school students. I set up and organized the Swiss Alkindi cryptography competition for high school students.

## MISSION STATEMENT

All societies are being endangered by the rushed deployments of insecure technologies at the hand of powerful governments and companies, without democratic accountability. My life work aims to secure our information systems, and to propose a democratic governance of the algorithms that most control these systems.

## MOST PROUD OF

H-index: 11  
282 scientific citations

Cited in US NIST Report  
NIST AI 100-2 E2023

20M YouTube views  
Science4All, Wandida, ZettaBytes...

200k Tournesol comparisons  
By 18k accounts on 20k videos

Island Peak (6198m)  
Climbed a Himalaya summit

## STRENGTHS

Scientific rigor Mathematics  
Pedagogy Public speaker Fast writer  
Interdisciplinarity Large network  
Machine learning Data science  
python javascript

## LANGUAGES

English ●●●●●●  
French ●●●●●●  
Vietnamese ●●●●●●  
Spanish ●●●●●●

Postdoctoral researcher

LIDS, MIT

📅 2015 – 2016

📍 Massachusetts, US

I worked on online optimization, i.e. optimizing over a future horizon, despite uncertainties about upcoming data and opportunities.

## RECENT PUBLICATIONS

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### 📖 Books

- R. Du Marais and L. N. Hoang, *Guide de survie au cybercrime en entreprise*. Dunod, 2024.
- L. N. Hoang and J.-L. Fourquet, *La dictature des algorithmes : Une transition numérique démocratique est possible*. Tallandier, 2024.
- L. N. Hoang and T. Le Magoarou, *SmartPoop 1.0 : L'histoire d'une IA qui se lâche*. Amazon, 2021.
- R. Guerraoui and L. N. Hoang, *Turing à la plage : L'intelligence artificielle dans un transat*. Dunod, 2020.
- L. N. Hoang, *The Equation of Knowledge: From Bayes' Rule to a Unified Philosophy of Science*. CRC Press, 2020.
- L. N. Hoang and E. M. El Mhamdi, *Le fabuleux chantier: Rendre l'intelligence artificielle robustement bénéfique*. EDP Sciences, 2019.

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### 📄 Journal Articles

- M. Gibert, L. Hoang, and M. Lambrecht, "Should youtube make recommendations for the climate?" *Ethics Inf. Technol.*, vol. 26, no. 3, p. 53, 2024. DOI: 10.1007/S10676-024-09784-4.
- E. El-Mhamdi, R. Guerraoui, A. Guirguis, L. N. Hoang, and S. Rouault, "Genuinely distributed byzantine machine learning," *Distributed Computing*, 2022.
- E. El-Mhamdi, R. Guerraoui, L. N. Hoang, and A. Maurer, "Removing algorithmic discrimination (with minimal individual error)," *Theoretical Computer Science*, 2022.
- L. N. Hoang, L. Faucon, and E.-M. El-Mhamdi, "Recommendation algorithms, a neglected opportunity for public health," *Revue Médecine et Philosophie*, 2021.
- L. N. Hoang, "Science communication desperately needs more aligned recommendation algorithms," *Frontiers in Communication*, vol. 5, p. 598 454, 2020.

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### 👥 Conference Proceedings

- J. Fageot, S. Farhadkhani, L. Hoang, and O. Villemaud, "Generalized bradley-terry models for score estimation from paired comparisons," AAAI Press, 2024.
- E.-M. El-Mhamdi, S. Farhadkhani, R. Guerraoui, and L. N. Hoang, "On the strategyproofness of the geometric median," in *AISTATS*, 2023.
- S. Farhadkhani, R. Guerraoui, L. N. Hoang, and O. Villemaud, "An equivalence between data poisoning and byzantine gradient attacks," in *ICML*, 2022.
- E. El-Mhamdi, S. Farhadkhani, R. Guerraoui, A. Guirguis, L. N. Hoang, and S. Rouault, "Collaborative learning in the jungle (decentralized, byzantine, heterogeneous, asynchronous and non-convex learning)," in *NeurIPS*, 2021.

## EDUCATION

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Ph.D. in mathematics

École Polytechnique de Montréal

📅 Sept 2010 – Dec 2014

Thesis title: Bayesian mechanism design and fairness quantification applied to personalized shift scheduling

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Engineering Degree

École Polytechnique

📅 Sept 2007 – June 2010

Specialized in Applied Mathematics

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Preparatory Classes

Lycée Louis le Grand

📅 Sept 2005 – June 2007

## MEDIA

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Intelligence artificielle : À quel saint se vouer ?

Infrarouge, RTS

📅 2023

Als are out of (democratic) control

Opinion piece, SwissInfo

📅 2023

ChatGPT : plongée dans les entrailles du chatbot qui bouleverse la tech

Les Échos

📅 2022

« Il faut nous préparer au possible avènement d'une intelligence artificielle de niveau humain »

Opinion piece, Le Monde

📅 2018

## REFEREES

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