

# Hugo Cisneros

PhD student in Computer Science: Machine Learning and Complex Systems.

## PERSONAL DATA

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Website: <https://hugocisneros.com>

LinkedIn: <https://www.linkedin.com/in/hugo-cisneros-04347212b/>

GitHub: <https://github.com/hugocis/>

## WORK & RESEARCH EXPERIENCE

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Mar 2023 - **Inicio (Start-up) Machine Learning Engineer**, Paris  
*Current*

Apr - Nov 2019 **CIIRC (Czech Institute of Informatics, Robotics and Cybernetics) Research Intern**, Prague  
Under the supervision of Tomas Mikolov (Facebook AI Research).

- Studied emergence, complexity and spontaneous organization in complex systems and their applications to Artificial intelligence.
- Built a neural network-based complexity metric for measuring emergence in cellular automata and other dynamical systems (implemented in **C**) which led to a peer-reviewed publication. [\[GitHub\]](#)

Mar - Sep 2018 **INRIA and CNRS (LIMSI) Research Intern**, Paris  
Under the supervision of Xavier Tannier and Ioana Manolescu.

- Built a pipeline generator for extracting and integrating multiple data sources with **Natural language processing (NLP) and data processing algorithms** for data journalism. [\[GitHub\]](#)
- Collaborated with journalists from *Le Monde (Les Décodeurs)* on automating their data processing pipelines and using NLP for their investigations.
- Reviewed literature on **machine learning in graphs, automatic knowledge base construction and natural language processing for fact checking**.

Jun 2017- Mar 2018 **Aiden.ai Software engineering and Machine Learning Intern**, London  
Built an AI powered virtual colleague for Marketing analysts based on **Natural Language Processing**. Implemented machine learning pipelines with **Python** for marketing data forecasting, classification and user clustering. Participated in implementing the chat interface and the Natural Language recognition system with **Javascript**.

Sep 2016 - Feb 2017 **ENS Ulm, Kastler-Brossel Laboratory Research assistant**, Paris  
**Light control and propagation in amplified multimode fibers**  
Implemented and optimized finite elements simulations with **Python** and **Matlab**. Performed high performance computing on large distributed clusters. Worked with PhD candidate Tom Sperber on building a tool for optimizing the propagation of a light beam in optical fibers. [\[Report\]](#)

## EDUCATION

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May 2023 PhD Student **INRIA, CIIRC CTU (Czech Technical University in Prague)**, Paris & Prague

Nov 2019 **Unsupervised learning with Complex Systems and Evolution**  
Under the supervision of Tomas Mikolov and Josef Sivic. Topics: complex dynamical systems, self-organization, artificial evolution, artificial intelligence.  
Supervision of Master-level theses and internship projects.

Sep 2019 MVA Master in Machine Learning and Applied Mathematics, **ENS Paris Saclay**, Paris

Sep 2018 Relevant Coursework: Convex Optimization, Probabilistic Graphical Models, Computer Vision, Reinforcement Learning, Deep Learning, Speech and Natural language processing, Kernel Methods, Biostatistics, Theoretical Foundations of Deep Learning — (GPA: 16.2 / 20)

Sep 2018 Master of Science in Engineering, **Mines ParisTech**, Paris

Sep 2015 Specialization: Computer Science — (3.7 GPA)  
Relevant Coursework: Machine Learning, Probabilities, Statistics, Programming

Aug 2015 Preparatory class for *Grandes Ecoles* **Lycée Stanislas** (Paris) MPSI and MP\*

Sep 2013 Bachelor's Degree in Mathematics and Physics, national competitive exam for entering engineering school.

Aug 2013 Scientific Baccalauréat (High school diploma in Maths, Physics and Life Sciences) - High distinction

## PUBLICATIONS

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Herel, D., Cisneros, H., & Mikolov, T. **Preserving Semantics in Textual Adversarial Attacks**. Preprint, under review at ICML 2023.

GitHub repo: <https://github.com/DavidHerel/semantics-preserving-encoder>

Cisneros, H., Sivic, J. & Mikolov, T. **Benchmarking Learning Efficiency in Deep Reservoir Computing**. First Conference on Lifelong Learning Agents (CoLLAs 2022).

GitHub repo: [https://github.com/hugcis/benchmark\\_learning\\_efficiency](https://github.com/hugcis/benchmark_learning_efficiency)

Cisneros, H., Sivic, J. & Mikolov, T. **Visualizing computation in large-scale cellular automata**. Artificial Life Conference Proceedings 32, 239–247 (2020).

Cisneros, H., Sivic, J. & Mikolov, T. **Evolving Structures in Complex Systems**. in 2019 IEEE Symposium Series on Computational Intelligence (SSCI) 230–237 (IEEE, 2019).

GitHub repo: <https://github.com/hugcis/evolving-structures-in-complex-systems>.

## PROJECTS

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Mar - Aug 2021 Participated in the Open-endedness evolution challenge at the GECCO 2021 conference competition track. Developed an open-ended algorithm based on Neural Cellular Automata in **Pytorch** within the game Minecraft. Finished second place. [GitHub][Blog post]

Jun - Aug 2018 Participated in the n2c2 shared task of Harvard Medical School *Cohort Selection for Clinical Trials* in a joint team from AP-HP and LIMSI. Implemented **weakly-supervised and transfer learning methods for Medical NLP** (Keras). Finished 2nd among 30 teams. [Preprint]

Jan 2018 Built a NLP based tool for discovering and matching similar arXiv papers based on similarity measures including **word embeddings-based similarities** of their abstract and **co-authorship graph distance**. [GitHub]

Feb 2017 Implemented a multi-currency blockchain in Python with a team of 9 people (Cryptography, network programming, team software development)

## PROGRAMMING SKILLS

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Advanced: Python (Tensorflow, Pytorch, Django), C, Rust, SQL (Postgres), Matlab, Java, Javascript (Node.js, Typescript and Web),  $\text{\LaTeX}$

Basic: Scala, Ruby, C++

## LANGUAGES

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ENGLISH:	Fluent	SPANISH:	Intermediate
FRENCH:	Mothertongue	JAPANESE:	School level

## INTERESTS AND ACTIVITIES

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- Mathematics, Statistics and Probabilities
- Technology, Open-Source, Programming
- Creative coding, Generative Art, [genocto.xyz](https://genocto.xyz)
- Running, Hiking, Fencing, Piano, Guitar