

# Hugo Cisneros

PhD student in Computer Science: Machine Learning and Complex Systems.  
Interested in using technology to help fight climate change.

## PERSONAL DATA

Website: <https://hugocisneros.com> | GitHub: <https://github.com/hugcis/>  
LinkedIn: <https://www.linkedin.com/in/hugo-cisneros-04347212b/>

## WORK & RESEARCH EXPERIENCE

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|---------------------|---|
| Apr - Nov 2019      | <b>CIIRC (Czech Institute of Informatics, Robotics and Cybernetics) <i>Research Intern</i></b> , Prague<br>Under the supervision of Tomas Mikolov (Facebook AI Research). <ul style="list-style-type: none"><li>· Studied emergence, complexity and spontaneous organization in complex systems and their applications to Artificial intelligence.</li><li>· 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. <a href="#">[GitHub]</a></li></ul>  |
| Mar - Sep 2018      | <b>INRIA and CNRS (LIMSI) <i>Research Intern</i></b> , Paris<br>Under the supervision of Xavier Tannier and Ioana Manolescu. <ul style="list-style-type: none"><li>· Built a pipeline generator for extracting and integrating multiple data sources with <b>Natural language processing (NLP) and data processing algorithms</b> for data journalism. <a href="#">[GitHub]</a></li><li>· Collaborated with journalists from <i>Le Monde (Les Décodeurs)</i> on automating their data processing pipelines and using NLP for their investigations.</li><li>· Reviewed literature on <b>machine learning in graphs, automatic knowledge base construction and natural language processing for fact checking</b>.</li></ul> |
| Jun 2017- Mar 2018  | <b>Aiden.ai <i>Software engineering and Machine Learning Intern</i></b> , London<br>Built an AI powered virtual colleague for Marketing analysts based on <b>Natural Language Processing</b> . Implemented machine learning pipelines with <b>Python</b> for marketing data forecasting, classification and user clustering. Participated in implementing the chat interface and the Natural Language recognition system with <b>Javascript</b> .   |
| Sep 2016 - Feb 2017 | <b>ENS Ulm, Kastler-Brossel Laboratory <i>Research assistant</i></b> , Paris<br><b><i>Light control and propagation in amplified multimode fibers</i></b><br>Implemented and optimized finite elements simulations with <b>Python</b> and <b>Matlab</b> . 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. <a href="#">[Report]</a>   |

## EDUCATION

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|----------------------|---|
| Jan 2023<br>Nov 2019 | PhD Student <b>INRIA, CIIRC CTU</b> (Czech Technical University in Prague), Paris & Prague<br><b><i>Unsupervised learning with Complex Systems and Evolution</i></b><br>Under the supervision of Tomas Mikolov and Josef Sivic. Topics: complex dynamical systems, self-organization, artificial evolution, artificial intelligence.<br>Supervision of Master-level theses and internship projects. |
| Sep 2019<br>Sep 2018 | MVA Master in Machine Learning and Applied Mathematics, <b>ENS Paris Saclay</b> , Paris<br>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<br>Sep 2015 | Master of Science in Engineering, <b>Mines ParisTech</b> , Paris<br>Specialization: Computer Science — (3.7 GPA)<br>Relevant Coursework: Machine Learning, Probabilities, Statistics, Programming   |
| Aug 2015<br>Sep 2013 | Preparatory class for <i>Grandes Ecoles</i> <b>Lycée Stanislas</b> (Paris) MPSI and MP*<br>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**. Pre-print, 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