

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 | CIIRC (Czech Institute of Informatics, Robotics and Cybernetics) <i>Research Intern</i> , Prague
Under the supervision of Tomas Mikolov (Facebook AI Research). <ul style="list-style-type: none">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) <i>Research Intern</i> , Paris
Under the supervision of Xavier Tannier and Ioana Manolescu. <ul style="list-style-type: none">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 <i>Le Monde (Les Décodeurs)</i> 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 <i>Software engineering and Machine Learning Intern</i> , 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 <i>Research assistant</i> , Paris
<i>Light control and propagation in amplified multimode fibers</i>
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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| Jan 2023
Nov 2019 | PhD Student INRIA, CIIRC CTU (Czech Technical University in Prague), Paris & Prague
<i>Unsupervised learning with Complex Systems and Evolution</i>
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
Sep 2018 | MVA Master in Machine Learning and Applied Mathematics, ENS Paris Saclay , Paris
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
Sep 2015 | Master of Science in Engineering, Mines ParisTech , Paris
Specialization: Computer Science — (3.7 GPA)
Relevant Coursework: Machine Learning, Probabilities, Statistics, Programming |
| Aug 2015
Sep 2013 | Preparatory class for <i>Grandes Ecoles</i> Lycée Stanislas (Paris) MPSI and MP*
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

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

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

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 LIMS. 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

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

Basic: Scala, Ruby, C++

LANGUAGES

ENGLISH:	Fluent	SPANISH:	Intermediate
FRENCH:	Mother tongue	JAPANESE:	School level

INTERESTS AND ACTIVITIES

- Mathematics, Statistics and Probabilities
- Technology, Open-Source, Programming
- Creative coding, Generative Art, genocto.xyz
- Running, Hiking, Fencing, Piano, Guitar