

# Carles DOMINGO-ENRICH

## CONTACT DATA

PHONE AND EMAIL: +1 929 334 5312, [cd2754@nyu.edu](mailto:cd2754@nyu.edu)  
NATIONALITY: Spanish, on STEM OPT status attached to F-1 visa  
WEBSITE: <https://cdenrich.github.io>

## EDUCATION

MAY 2024 | PhD in **Computer Science** at the **Courant Institute of Mathematical Sciences, New York University**. Advisor: Joan Bruna. Topics of research: diffusion models, generative modeling, theory of deep learning, hypothesis testing, optimization for continuous games.  
SEPT 2019 |  
SEPT 2014 | Student of Bachelor's degrees in **Mathematics** and **Engineering Physics**  
- MAY 2019 | at **Universitat Politècnica de Catalunya (UPC)**, Barcelona. Student at CFIS (Interdisciplinary Higher Education Center). FINAL GRADES: 8.63/10 (Math.), 8.98/10 (Eng. Physics)

## RESEARCH AND WORK EXPERIENCE

*Current*  
SEPT 2024 | Senior Researcher at **Microsoft Research** New England in Cambridge, MA, working on generative AI models  
AUG 2024 | Visiting Researcher (part-time) at **Meta FAIR Labs** in New York City, NY, working with  
OCT 2022 | Ricky T. Q. Chen and Brandon Amos.  
MAY-AUG 2022 | Intern at **Microsoft Research** New England in Cambridge, MA (remote), working with Lester Mackey.  
MAY-AUG 2021 | Intern at **IBM Research AI** in Yorktown Heights, NY (remote), working with Youssef Mroueh.  
2020-2022 | TA for the courses DS-GA 1014 Optimization and Computational Linear Algebra for Data Science (Fall 2020), and CSCI-GA 3033-079 Special Topic: Mathematics of Deep Learning (Spring 2022). TA and grader for the course DS-GA 1005 Inference and Representation (Fall 2021).  
SEPT '18-MAY '19 | Student intern at NYU, Courant Institute of Mathematical Sciences  
MAY-AUG 2018 | Data scientist intern at Gauss & Neumann (SEM firm) in Barcelona  
JUL-SEPT 2017 | Summer research intern at Nokia Bell Labs in Paris (Nokia Paris-Saclay)

## PUBLICATIONS AND PREPRINTS

- He, J., Blessing, D., Cheng, M., Du, Y., **Domingo-Enrich, C.** Fixed-point neural samplers on discrete spaces. arXiv preprint Oct. 2026.
- Char, S., **Domingo-Enrich, C.**, Balestrieri, R. Bigger Text Encoders Can Hurt CLIP Zero-Shot Performance. arXiv preprint Sept. 2026.
- Blessing, D.<sup>\*</sup>, Cheng, M.<sup>\*</sup>, Schebek, M., Rogal, J., Li, M., **Domingo-Enrich, C.**<sup>†</sup>, Du, Y.<sup>†</sup>. JANUS: A Multi-modal Foundation Neural Sampler for Disordered Materials. arXiv preprint Aug. 2026.
- Cheng, M.<sup>\*</sup>, Blessing, D.<sup>\*</sup>, Yu, B., Neumann, G., Li, M., **Domingo-Enrich, C.**<sup>†</sup>, Du, Y.<sup>†</sup>. ATLAS: A Foundation Neural Sampler for Amorphous Materials. arXiv preprint Jul. 2026.
- He, J., Ou, Z., Vargas, F., Li, Y., Hernández-Lobato, J. M., **Domingo-Enrich, C.**, Du, Y. Free energy Estimation on Any State Space. NeurIPS 2026.
- Bergmeister, A., Jegelka, S., Nüsken, N., **Domingo-Enrich, C.**<sup>†</sup>, Pidstrigach, J.<sup>†</sup>. Reinforce Adjoint Matching: Scaling RL Post-Training of Diffusion and Flow-Matching Models. NeurIPS 2026.

- **Domingo-Enrich, C.**, Du, Y., Albergo, M. S. A unified perspective on fine-tuning and sampling with diffusion and flow models. arXiv preprint Apr. 2026.
- Du, Y., He, J., Zhang, D., Vanden-Eijnden, E., **Domingo-Enrich, C.** Rare Event Analysis via Stochastic Optimal Control. arXiv preprint Apr. 2026.
- **Domingo-Enrich, C.**, Han, J. Adjoint Matching through the Lens of the Stochastic Maximum Principle in Optimal Control. TMLR 2026.
- Jelassi, S.\*, Kwun, M.\*, Zhao, R.\*, Li, Y., Fusi, N., Du, Y., Kakade, S. M., **Domingo-Enrich, C.\***. Matching Features, Not Tokens: Energy-Based Fine-Tuning of Language Models. arXiv preprint Mar. 2026.
- Golowich, N., Chen, F., Rohatgi, D., Singhal, R., **Domingo-Enrich, C.**, Foster, D. J., Krishnamurthy, A. Reject, Resample, Repeat: Understanding Parallel Reasoning in Language Model Inference. NeurIPS 2026.
- Sabour, A.\*, Albergo, M. S.\*, **Domingo-Enrich, C.\***, Boffi, N. M., Fidler, S., Kreis, K., Vanden-Eijnden, E. Test-time scaling of diffusions with flow maps. NeurIPS 2026.
- Horvitz, Z., Singhal, R., Zou, H., **Domingo-Enrich, C.**, Yu, Z., Ranganath, R., McKeown, K. Rethinking Reasoning with MDLMs: Early Exits, Post-hoc Reasoning, and Beyond. COLM 2026.
- Liu, Z., Xiao, T. Z., **Domingo-Enrich, C.**, Liu, W., Zhang, D. Value Gradient Guidance for Flow Matching Alignment. NeurIPS 2025.
- Kim, J.\*, Lee, C.-K.\*, **Domingo-Enrich, C.**, Du, Y., Kakade, S., Ngotiaoco, T., Chen, S.<sup>†</sup>, Albergo, M.<sup>†</sup>. Any-Order Flexible Length Masked Diffusion. ICLR 2026. \*Equal contribution, <sup>†</sup>Senior equal contribution
- Blessing, D., Berner, J.\*, Richter, L.\*, **Domingo-Enrich, C.\***, Du Y., Vahdat, A., Neumann, G. Trust Region Constrained Measure Transport in Path Space for Stochastic Optimal Control and Inference. NeurIPS 2025 (**spotlight**, ~ 4% of submissions). \*Equal contribution
- Yang, K. K., Alamdari, S., Lee, A., Kaymak-Loveless, K., Char, S., Bixi, G., **Domingo-Enrich, C.**, Wang, C., Lyu, S., Fusi, N., Tenenholz, N., Amini, A. P. The Dayhoff Atlas: scaling sequence diversity for improved protein generation. bioRxiv preprint Jul. 2025.
- Havens, A., Kurt Miller, B., Yan, B., **Domingo-Enrich, C.**, Sriram, A., Wood, B., Levine, D., Hu, B., Amos, B., Karrer, B., Fu, X., Liu, G.-H., Chen, R. T. Q. Adjoint Sampling: Highly Scalable Diffusion Samplers via Adjoint Matching. ICML 2025.
- Pidstrigach, J., Baker, E., **Domingo-Enrich, C.**, Deligiannidis, G., Nüsken, N. Conditioning Diffusions Using Malliavin Calculus. ICML 2025.
- **Domingo-Enrich, C.**, Dwivedi, R., Mackey, L. Cheap permutation testing. Annals of Statistics (to appear).
- Wang, C., Alamdari, S., **Domingo-Enrich, C.**, Amini, A., Yang, K. K. Towards deep learning sequence-structure co-generation for protein design. Current Opinion in Structural Biology, 2025.
- **Domingo-Enrich, C.** A taxonomy of loss functions for stochastic optimal control. arXiv preprint Oct. 2024.
- **Domingo-Enrich, C.**, Drozdal, M., Karrer, B., Chen, R.T.Q. Adjoint matching: fine-tuning flow and diffusion generative models with memoryless stochastic optimal control. ICLR 2025 (**spotlight**, ~ 5% of submissions).
- **Domingo-Enrich, C.**, Han, J., Amos, B., Bruna, J., Chen, R.T.Q. Stochastic optimal control matching. NeurIPS 2024.
- Pooladian, A.-A., **Domingo-Enrich, C.**, Chen, R.T.Q., Amos, B. Neural optimal transport with Lagrangian costs. UAI, 2024.

- Jelassi, S., d’Ascoli, S., **Domingo-Enrich, C.**, Wu, Y., Li, Y., Charton, F. Length generalization in arithmetic transformers. arXiv preprint Jun. 2023.
- Cabannes, V., **Domingo-Enrich, C.** Open problem: learning with variational objectives on measures. arXiv preprint Jun. 2023.
- **Domingo-Enrich, C.**, Pooladian, A.-A. An explicit expansion of the Kullback-Leibler divergence along its Fisher-Rao gradient flow. TMLR 2023.
- Pooladian, A.-A.\*, Ben-Hamu, H.\*, **Domingo-Enrich, C.\***, Amos, B., Lipman, Y., Chen, R.T.Q. Multisample flow matching: straightening flows with minibatch couplings. ICML 2023. \*Equal contribution
- **Domingo-Enrich, C.**, Dwivedi, R., Mackey, L. Compress then test: powerful kernel testing in near-linear time. AISTATS 2023.
- **Domingo-Enrich, C.** Computing the variance of shuffling stochastic gradient algorithms via power spectral density analysis. arXiv preprint Jun. 2022.
- **Domingo-Enrich, C.**, Mroueh, Y. Auditing differential privacy in high dimensions with the kernel quantum Rényi divergence. arXiv preprint May 2022.
- **Domingo-Enrich, C.**, Schiff, Y., Mroueh, Y. Learning with stochastic orders. ICLR 2023 (**spotlight**,  $\sim 8\%$  of submissions).
- **Domingo-Enrich, C.**, Bruna, J. Simultaneous transport evolution for minimax equilibria on measures. arXiv preprint Feb. 2022.
- **Domingo-Enrich, C.** Depth and feature learning are provably beneficial for neural network discriminators. COLT 2022.
- **Domingo-Enrich, C.**, Mroueh, Y. Tighter sparse approximation bounds for ReLU neural networks. ICLR 2022 (**spotlight**,  $\sim 5\%$  of submissions).
- **Domingo-Enrich, C.**, Bietti, A., Gabrié, M., Bruna, J., Vanden-Eijnden E. Dual training of energy-based models with overparametrized shallow neural networks. arXiv preprint July 2021.
- **Domingo-Enrich, C.**, Mroueh Y. Separation results between fixed-kernel and feature-learning probability metrics. NeurIPS 2021 (**oral**,  $< 1\%$  of submissions).
- **Domingo-Enrich, C.**, Bietti, A., Vanden-Eijnden, E., Bruna, J. On energy-based models with overparametrized shallow neural networks. ICML 2021 (**long talk**,  $\sim 3\%$  of submissions).
- **Domingo-Enrich, C.**, Pedregosa, F., Scieur, D. Average-case acceleration for bilinear games and normal matrices. ICLR 2021.
- **Domingo-Enrich, C.**, Jelassi, S., Mensch, A., Rotskoff, G., Bruna, J. A mean-field analysis of two-player zero-sum games. NeurIPS 2020.
- Jelassi, S.\*, **Domingo-Enrich, C.\***, Scieur, D., Mensch, A., Bruna, J. Extragradient with player sampling for faster Nash equilibrium finding. ICML 2020. \*Equal contribution.
- Domingo-Ferrer, J., Ricci, S., **Domingo-Enrich, C.** Outsourcing scalar products and matrix products on privacy-protected unencrypted data stored in untrusted clouds. Information Sciences, vol. 436-437, pp. 320-342, April 2018.

## FELLOWSHIPS AND ACHIEVEMENTS

---

- OCT 2021 | NeurIPS 2021 Outstanding Reviewer award
- JUL 2018 | **La Caixa Fellowship** for postgraduate studies in North America and the Asia-Pacific region. 55 fellowships were awarded among 446 Spanish applicants. The fellowship covers tuition of the PhD program and a stipend of around \$30k/year for 24 months.
- JUN 2014 | **First student ever to achieve a perfect score (10/10)** in the general phase of the University Entrance Examinations of Catalonia (Proves d'Accés a la Universitat - PAU). These examinations have taken place every year for more than 30 years. The general phase consists of 5 tests that all students applying for a degree in a Catalan university must take. Newspaper article (in Spanish): [http://ccaa.elpais.com/ccaa/2014/06/27/catalunya/1403862593\\_090989.html](http://ccaa.elpais.com/ccaa/2014/06/27/catalunya/1403862593_090989.html)
- 2014 | Bronze medal at the 2014 Spanish Mathematical Olympiad and silver medal at the 2014 Spanish Physics Olympiad.

## LANGUAGES AND COMPUTER SKILLS

---

Languages: CATALAN (mother tongue), SPANISH (proficient), ENGLISH (Cambridge English: Advanced, TOEFL 113), FRENCH (Upper intermediate, DELF B2), GERMAN (Intermediate, B1+, EOI - Official Language School of Catalonia)

Programming languages: PYTHON, PYTORCH, C++, MATLAB, OCAML, R, MYSQL