Guillaume
Poirier-Morency

Bioinformatics Programmer/Analyst

I currently work as a Bioinformatics Analyst at the Michael Smith Laboratories under the direction of Dr. Paul Pavlidis. I build next-generation sequencing pipelines that scale up to thousands of nodes to preprocess data for meta-analysis of gene expression studies. In parallel to all this, I also work as a Web Software Developer for the Rare Disease Models and Mechanisms Network.

I graduated in Computer Science at Université de Montréal and pursued a master degree specialized in Computational Biology and Deep Learning at the Institute for Research in Immunology and Cancer (IRIC) under the supervision of François Major. Our research mainly focused on the problem of understanding microRNA-mediated regulation of gene expression using partial differential equations and statistical models.

Featured skillset

- Programming in C, Python, Java, etc.
- Web programming in Python and Java with HTML5, CSS, JavaScript, etc.
- Software development with git, Meson, etc.
- Machine learning
- Numerical optimization
- Mathematical modelling
- RNA-Seq and WGS data analysis

Professional experience

Since 2019   **Bioinformatics Programmer/Analyst**, *The University of British Columbia*, Vancouver.
Work under the direction of Dr. Paul Pavlidis at the Michael Smith Laboratories with whole genome sequencing and RNA-Seq data.

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in *arteymix*

Summer 2019	**Teaching Assistant**, *Université de Montréal*, Montreal. Bioinformatics analysis (BIM6065C)
Automn 2018	**Teaching Assistant**, *Université de Montréal*, Montreal. Data structure (IFT2015/IFT6002)
2016 to 2017	**Research Intern**, *IRIC*, Montreal.
Winter 2016	**Teaching Assistant**, *Université de Montréal*, Montreal. Mobile programming (IFT1155)
2014 to 2015	**Web Developer**, *RueDesJuristes*, Montreal. Web platform offering various juridic services for french corporations.
2012 to 2015	**Web and Software Developer**, *Hète.ca*, Montreal. Web development with PHP5 and the Kohana framework, jQuery, MySQL, SQLite and other tools.

▬▬▬ Academic background and distinctions

2017 to 2021	**M.Sc.**, *Université de Montréal*, Montreal. Master of Computer Science with Computational Biology focus
Summer 2016	**Award**, *Université de Montréal*, Montreal, $2000. FRQNT supplement for NSERC USRA awardees
Summer 2016	**Award**, *Université de Montréal*, Montreal, $5675. NSERC Undergraduate Student Research Awards
2014 to 2017	**B.Sc.**, *Université de Montréal*, Montreal. Bachelor degree in Computer Science
2013 to 2014	**B.Sc.**, *Université de Montréal*, Montreal. Bachelor in Computer Science and Mathematics
2010 to 2013	**College**, *Collège de Bois-de-Boulogne*, Montreal. College degree in Computer Science and Mathematics
2007 to 2010	**High School**, *Polyvalente Horizon-Jeunesse*, Laval.
2005 to 2007	**High School**, *Évangéline High School*, Montreal.

▬▬▬ Projects and competitions

2020	**RDMM**, *The University of British Columbia*, `https://rare-diseases-catalyst-network.ca/`. The Rare Disease Model & Mechanism Network enables collaboration among canadian modal organism researchers to study rare disease.

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2020	**MAGERS**, *The University of British Columbia*, Vancouver.
	Performed analysis on linked-read whole-genome sequencing and whole blood RNA-Seq data on a cohort of deeply phenotyped schizophrenia patients.
2019	**miRBooking-scan**, *IRIC*, `https://major.iric.ca/~poirigui/mirbooking-scan/`.
	Web application written Python with Flask and SQLite offering predictions from the miRBooking model over a set of commonly used cell lines.
2019	**Hackaton BDC**, *BDC*, Montreal.
2017	**CSGames 2017**, *ÉTS*, Montreal.
	First places in Web and Relay Programming competitions, second place incryotocurrency mining challenge and third place in Artificial Intelligence.
2016	**CSGames 2016**, *UQÀM*, Montreal.
	Second place in Web competition.
Summer 2015	**RNA Engineering Lab**, *IRIC*, Montreal.
	Summer project at François Major's RNA Engineering Lab.
2015	**CSGames 2015**, *Université de Sherbrooke*, Sherbrooke.
	Second places in Web and Relay Programming competitions.
	Valum, `https://github.com/valum-framework/valum`.
	Valum is a asynchronous Web micro-framework powering applications written in Vala.
2014	**WearHacks**, *La Commune*, Montreal.
	Hackaton with wearable devices.
2014	**CSGames 2014**, *ÉTS*, Montreal.
	Participation to Web and Database challenges.

Publications and contributions

2021	**Curation of over 10 000 transcriptomic studies to enable data reuse**, *Database*.
Unpublished	**normfact: Scalable Normalization of k-mer Count Databases**.
	Normalize k-mer count databases for RNA-Seq comparing samples.

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Unpublished	**miRBooking 2.0: an Enzymatic Model for the Micro-targetome**, `https://major.iric.ca/mirbooking/`.
	Large-scale enzymatic model of post-transcriptional gene regulation that models miRISC complexes and their target RNA with partial differential equations.
2020	**Modélisation des réseaux de régulation des gènes par les microARN**, *Papyrus*.
2019	**RiboClub Annual Meeting**, Sherbrooke.
	I was scheduled for a poster presentation of miRBooking 2.0, but I couldn't make it to the event.
2019	**Montreal RNA Salon**, *IRCM*, Montreal.
	First talk of the event presenting miRBooking 2.0.
2019	**CSMB Annual Conference**, Montreal.
	Short talk at the Computer Model session.
2019	**Forum Bioinfo**, *Université de Montréal*, Montreal.
2018	**IRIC Symposium**, Montreal.
	Poster and rapid talk.
2018	**RiboClub Seminar**, Sherbrooke.
	Short talk introducing miRBooking 2.0.

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