

Romain Martinez

SENIOR DATA SCIENTIST · WEB DEVELOPER

Montreal, Canada

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Experiences

Manulife

SENIOR DATA SCIENTIST, GENERATIVE AI SPECIALIST

Development of generative AI solutions and advanced analytics across the organization

AI Innovation : Research and implementation of state-of-the-art large language models and generative AI technologies.

Business Integration : Application of AI solutions to solve complex business problems and drive strategic initiatives.

Team Leadership : Mentoring team members and establishing best practices in data sciences methodologies.

Montréal, Canada

Since June 2024

CAE Inc.

DATA SCIENTIST TECHNICAL LEAD

Leadership in data science initiatives and AI strategy implementation across multiple domains

CAE Rise : Evolved from Data Scientist to Main Developer, and finally to Product Owner for this data-driven pilot training system. Rewrote backend and frontend, transforming it into a key product offering.

Pilot Communication Analysis : Developed a speech-to-text system using fine-tuned models, integrated with flight telemetry for enhanced training insights.

Predictive Maintenance : Processed complex spatiotemporal sensor data to predict simulator component failures.

Issue Resolution : Optimized large backlogs of simulator issues, predicting ticket priorities and planning future iterations.

Course Design : Automated learning objective extraction from various documents and generated exam questions using AI.

Technical Leadership : Led multiple proof-of-concepts, mentored team members, and established best practices in data science methodologies.

Montréal, Canada

October 2021 - June 2024

Montreal Canadiens

DATA SCIENTIST

Development of web applications and analytics solutions used across the organization to drive immediate and ongoing value:

Hockey operations : analysis of game statistics in real time and production of pre- and post-game reports.

Sports science : monitoring of physiological variables and statistical analysis of the training load.

Scouting : detection, coordination and statistical analysis of professional and junior players.

Montréal, Canada

September 2018 - June 2024

Institut Ivado

DATA SCIENTIST (500 HOURS)

Statistical analysis and redaction of two scientific reports on training load monitoring in professional hockey

Montréal, Canada

September 2018 - April 2019

Université de Montréal

TEACHING ASSISTANT (270 HOURS)

Creation, preparation and teaching of university courses

KIN6839 : motion kinetics and kinematics (2018 and 2020)

KIN2024 : joint biomechanics and motion analysis (2016, 2017 and 2018)

Montréal, Canada

September 2016 - April 2020

Confidential

BIOMECHANICAL CONSULTANT (25 HOURS)

Musculoskeletal modeling, statistical analysis and scientific report used in trial deliberation

Montréal, Canada

June 2017 - July 2017

Education

Université de Montréal

PHD IN KINESIOLOGY

Development of biomechanical indicators in manual handling tasks

Montréal, Canada

September 2016 - December 2020

Aix-Marseille Université

MSC IN HUMAN MOVEMENT ENGINEERING AND ERGONOMICS

First year abroad at the University of Ottawa

Marseille, France

September 2014 - September 2016

Aix-Marseille Université

BSC IN KINESIOLOGY

Specialization in Sport Ergonomics and Movement Performance

Marseille, France

September 2011 - September 2014

Skills

Data science Python, Numpy, Pandas, Pymc3, Scikit-learn, PyTorch

DevOps Git, GitHub, Linux, Azure, Aws, Docker, Bash

Back-end MongoDB, SQL, FastAPI, Flask, Rest

Front-end JavaScript (Vue.js), Css (Tailwind Css), HTML5

Languages French, English, Spanish (comprehension)

Distinction

HONORS

2016 - 2020 **Rector's honor list**, PhD in Kinesiology

Montréal, Canada

2016 - 2020 **Honor roll**, PhD in Kinesiology

Montréal, Canada

2014 - 2016 **Honor roll**, MSc in Human Movement Engineering and Ergonomics

Marseille, France

2011 - 2014 **Honor roll**, BSc in Kinesiology

Marseille, France

AWARDS

2016 - 2020 **Bourse sur fond de recherche**, Laboratoire de Simulation et de Modélisation du Mouvement

Montréal, Canada

March 2018 **Best scientific presentation**, Journée de la recherche de l'Université de Montréal

Montréal, Canada

2014 - 2016 **Valedictorian**, MSc in Human Movement Engineering and Ergonomics

Marseille, France

2011 - 2014 **Valedictorian**, BSc in Kinesiology

Marseille, France

Publications

- 🔗 **Predicting eggbeater kick performances from hip joint function testing in artistic swimming**

MARTINEZ R., ASSILA N., MONGA-DUBREUIL E., DESMYTTERE G., BEGON M.

2022

SportRxiv

- 🔗 **Développement d'indicateurs biomécaniques en manutention et leur application dans l'étude des différences entre les sexes lors de levers de charges en hauteur**

MARTINEZ R.

2021

Thèse de Doctorat de l'Université de Montréal

- 🔗 **Pyomeca: an open-source framework for biomechanical analysis**

MARTINEZ R., MICHAUD B., BEGON M.

2020

Journal of Open-Source Software

- 🔗 **Sex differences in upper limb musculoskeletal biomechanics during a lifting task**

MARTINEZ R., ASSILA N., GOUBAULT E., BEGON M.

2020

Applied Ergonomics

- 🔗 **Sex differences in upper Limb 3D joint contributions during a lifting task**

MARTINEZ R., BOUFFARD J., MICHAUD B., PLAMONDON A., CÔTÉ J. N., BEGON M.

2019

Ergonomics

- 🔗 **L'effet du sexe sur l'activation des muscles de l'épaule lors d'une tâche de manutention**

MARTINEZ R.

2016

Thèse de Master d'Aix-Marseille Université

- 🔗 **Introduction à l'apprentissage automatique en biomécanique**

MARTINEZ R.

2018

Examen de synthèse de l'Université de Montréal

- 🔗 **Analyse critique de la modélisation musculo-squelettique en manutention**

MARTINEZ R.

2018

Examen de synthèse de l'Université de Montréal

Sex differences in glenohumeral muscle activation and coactivation during a box lifting task

BOUFFARD J., **MARTINEZ R.**^{Co-first author}, PLAMONDON A., CÔTÉ J. N., BEGON M.

Ergonomics

2019

Effet du sexe et de l'expertise sur les contraintes à l'épaule en manutention

GOUBAULT E., **MARTINEZ R.**^{Co-first author}, ASSILA N., DOWLING-MEDLEY J., MONGA-DUBREUIL E., SCHERRER S.A., PLAMONDON A., BEGON M.

2020

IRSST - rapport prévention en SST et environnement de travail

Shoulder electromyography-based indicators to assess manifestation of muscle fatigue during laboratory-simulated manual handling task

GOUBAULT E., **MARTINEZ R.**, BOUFFARD J., DOWLING-MEDLEY J., BEGON M., DAL MASO F.

Ergonomics

2021

Effect of expertise on shoulder and upper limb kinematics, electromyography and estimated muscle forces during a lifting task

GOUBAULT E., **MARTINEZ R.**, ASSILA N., MONGA-DUBREUIL E., DOWLING-MEDLEY J., DAL MASO F., BEGON M.

Human Factors

2020

In-Season session training Load relative to match load in professional ice hockey

ALLARD P., **MARTINEZ R.**, DEGUIRE S., TREMBLAY J.

The Journal of Strength and Conditioning Research

2020

Shoulder muscle activation strategies differ when lifting or lowering a load

TURPIN N., **MARTINEZ R.**, BEGON M.

European Journal of Applied Physiology

2020

Shoulder muscles coordination during eccentric actions

TURPIN N., **MARTINEZ R.**, BEGON M.

Computer Methods in Biomechanics and Biomedical Engineering

2020

EMG-Assisted Algorithm to Account for Shoulder Muscles Co-contraction in Overhead Manual Handling

ASSILA N., PIZZOLATO C., **MARTINEZ R.**, LLOYD D., BEGON M.

Applied Sciences

2020

Chapter 20 - Motion analysis and modeling of the shoulder: challenges and potential applications

BLACHE Y., **MARTINEZ R.**, DUMAS R., BEGON M., HAGEMEISTER N., DUPREY S.

DHM and Posturography

2019

Développer des valeurs normatives des ratios et asymétries de force maximale isométrique des muscles de la hanche pour des athlètes élites

MARION P., AIZEN K., DESMYTTERE G., MONGA-DUBREUIL E., **MARTINEZ R.**, ASSILA N., BEGON M.

Institut National du Sport

2019

Talks

Développement d'indicateurs biomécaniques en manutention et leur application dans l'étude des différences entre les sexes lors de levers de charges en hauteur

Montréal, Canada

UNIVERSITÉ DE MONTRÉAL

2020

Soutenance de thèse de Doctorat

Pyomeca: une librairie Python d'analyse biomécanique

Montréal, Canada

INSTITUT TRANSMEDTECH

2020

Café scientifique TransMedTech

Inférence statistiques: une application en biomécanique

Montréal, Canada

UNIVERSITÉ DE MONTRÉAL

2020

KIN6839: cinétique et cinématique du mouvement

 Modélisation musculo-squelettiques: concepts et intuitions	Montréal, Canada
UNIVERSITÉ DE MONTRÉAL	2020
KIN6839: cinétique et cinématique du mouvement	
 Développement d'indicateurs de risque de troubles musculo-squelettiques à l'épaule	Montréal, Canada
ÉCOLE DE TECHNOLOGIE SUPÉRIEURE	2019
Inauguration du Laboratoire International Associé	
 Estimation du risque de blessure en hockey professionnel: une approche bayésienne innovante	Montréal, Canada
UNIVERSITÉ DE MONTRÉAL	2019
Journée de la recherche	
 Effective computation in biomechanics	Montréal, Canada
UNIVERSITÉ DE MONTRÉAL	2019
KIN6839: cinétique et cinématique du mouvement	
 Machine learning reduces the amount of necessary maximum voluntary isometric contractions tests of the shoulder muscles	Dublin, Ireland
THE DUBLIN CONFERENCE CENTRE	2018
World Congress of Biomechanics	
 Sex-specific scapulo-humeral rhythm during a lifting task	Dublin, Ireland
THE DUBLIN CONFERENCE CENTRE	2018
World Congress of Biomechanics	
 Normalisation de signaux électromyographiques à l'aide de l'apprentissage automatique	Montréal, Canada
UNIVERSITÉ DE MONTRÉAL	2018
Journée de la recherche	
 Gender differences in upper limb 3D joints contributions during a lifting task	Boulder, USA
UNIVERSITY OF COLORADO	2017
American Society of Biomechanics	
 L'effet du sexe sur la contribution des articulations du membre supérieur lors d'une tâche de manutention	Sherbrooke, Canada
DÉPARTEMENT DE KINÉSIOLOGIE, UNIVERSITÉ DE SHERBROOKE	2017
Association Québécoise des Sciences de l'Activité Physique	
 L'effet du sexe sur la contribution des articulations du membre supérieur lors d'une tâche de manutention	Montréal, Canada
UNIVERSITÉ DE MONTRÉAL	2017
Journée de la recherche	
 L'effet du sexe sur l'activation des muscles de l'épaule lors d'une tâche de manutention	Montréal, Canada
CENTRE DE RECHERCHE DU CHU SAINTE-JUSTINE	2016
Symposium de l'Axe Maladies Musculosquelettiques et Réadaptation	