

UZMAR DE JESUS GOMEZ YANEZ

CURRICULUM VITAE

MSC SCIENTIFIC COMPUTING AND DATA ANALYSIS



PERSONAL STATEMENT

Hands-on experience applying Machine Learning algorithms. Excellent usage of GNU / Linux systems and knowledge of object-oriented programming languages such as Python and C++. I have worked in the academic field as a teacher assistant, teaching mathematics, computer science, physics and other topics at a university level. Good understanding of algorithms, data structures, bayesian statistics, etc. Experience managing containerized applications using Kubernetes.

PERSONAL DATA

ADDRESS: Edinburgh, Scotland
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GITHUB: <https://github.com/uzmargomez>
RESEARCHGATE: <https://www.researchgate.net/profile/Uzmar-Gomez>

EDUCATION

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| 2022 | MSc in Scientific Computing and Data Analysis , Department of Computer Science, Durham University, Durham, United Kingdom. |
| 2021 | Specialization: Earth and Environmental Sciences Dissertation: <i>"GPU Programming with Standard C++"</i> Description: Used NVIDIA HPC SDK compiler suite to accelerate ExaHyPE's Finite Volume scheme, a generic code base to simulate wave equations. The resulting code was benchmarked against an OpenMP GPU offloading code port of exactly the same code structure, and we report on some problems and benefits of the new C++ software stack. Advisor: Dr Tobias Weinzierl GRADE: Distinction Detailed List of Grades |
| 2018 | BSc in Physics , Faculty of Science, National Autonomous University of Mexico (UNAM), Mexico City, Mexico. |
| 2011 | Dissertation: <i>"Numerical Study of Vlasov Equation in the Schwarzschild Metric"</i> Description: Creation of a finite differences scheme that evolves the relativistic Vlasov equation on a black hole metric background, assuming this is an advective equation, with velocities dependent both on time and position. Advisor: Dr Miguel Alcubierre OVERALL SCORE: 9.37/10 Detailed List of Grades |

LANGUAGES

ENGLISH: C1 Level - IELTS (2021)
SPANISH: Mothertongue
FRENCH: Basic

COMPUTER SKILLS

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| Programming Languages | Python, C++, Fortran, Julia |
| Machine/Deep Learning | TensorFlow, Keras, PyTorch, Facebook Prophet, ARIMA, SARIMA, LDA, PCA, Kmeans, KNN, Neural Networks, Recommendation systems, Classification and Regression problems |
| Serving | Triton, Seldon Core, TFServing |
| Databases | SQL, MongoDB |
| Containers | Docker, Kubernetes |
| Operating Systems | GNU/Linux, Windows |
| Web Backend | Flask |
| Web Frontend | HTML (Plotly Dash), Bootstrap |
| Version Control | Git |
| Parallel Computing | C++ Standard Algorithms, CUDA Python |
| Data Visualization | Plotly Dash, Qlik, Tableau |
| GCP Tools | BigQuery, BQ ML, Compute Engine, Composer (Airflow), Artifact Registry, Kubernetes Engine, Storage, Data Studio, Kubeflow, Data Fusion, Cloud Build, VertexAI |
| Kubernetes Infrastructure | Kubectl, Helm, Kustomize, Ansible, ArgoCD, Grafana, Prometheus, HashiCorp Vault, MetalLB, NGINX Ingress, Istio Gateway, GSLB |

EXPERIENCE

Short Description

Mar 2023 - Present. ML R&D Programmer at Rockstar Games. Deployment and administration of the on-prem Kubernetes infrastructure for the ML Animation Team, using tools such as Kubectl, Helm, Ansible, ArgoCD, Grafana, Hashicorp Vault, and others.

Sep 2022 - Mar 2023. Associate ML R&D Programmer at Rockstar Games.

Jul 2020 - Jan 2022. Data Scientist at Rackspace Technology. I helped migrate data from on-premises servers to the GCP cloud. I worked on churn prediction models that used features related to the COVID19 spreading aside from other business-related features to predict customer attrition, this work includes the development of the model using XGBoost, as well as the deployment of it using Kubeflow and the serving via Seldon Core. I was also involved in constructing an SSAS OLAP Cube to be used by the company for inventory-related queries. I worked on NLP tasks, such as extracting themes out of tickets using semantic similarity, by getting embeddings vectors out of sentences with a transformer architecture named Universal Sentence Encoder. Worked on how to translate voice to text. I built two production-level applications using Plotly Dash.

Dec 2019 - Jun 2020. Data Scientist at Softtek. I worked on a face recognition system using a method called Sparse Representation and another one using Neural Networks. I acquired a deep understanding of Neural Networks for Face Detection and Recognition, Image Classification, and Language Processing, among others, as well as some experience in Data Visualization tools such as Tableau.

Sep 2019 - Dec 2019. Data Scientist Trainee at Softtek. I learned about different statistical and machine learning techniques and algorithms to study a wide variety of problems.

Sep 2018 - Dec 2019. I have research experience using the Einstein Toolkit, a software platform created for supporting research in relativistic astrophysics and gravitational physics.

2016 - 2019. Worked as a Teacher's Assistant. I've given lectures aimed at Computer Science and Physics Students on the following topics:

- Computer Science.
<https://web.fciencias.unam.mx/assignaturas/102.pdf>
- Selected Topics in Relativity, Cosmology and Gravitation 1.
<https://web.fciencias.unam.mx/docencia/horarios/presentacion/295997>
- Relativity
<https://web.fciencias.unam.mx/assignaturas/718.pdf>
- Mathematics I for Applied Sciences.
<http://www.fciencias.unam.mx/assignaturas/1118.pdf>
- Mathematics II for Applied Sciences.
<http://www.fciencias.unam.mx/assignaturas/1216.pdf>

INTERESTS AND ACTIVITIES

Academic

Data Science, Machine Learning, Deep Learning, Numerical Analysis, General Relativity, Numerical Relativity, Black Holes.

Non academic

Science Fiction and Fantasy Reading, Videogames, Running, Swimming, Playing Guitar, Traveling.

EXTRA CURRICULAR ACTIVITIES

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| JUN 2022 | Student Representative MiSCaDA Programme |
| OCT 2021 | Durham University Provide a link between students and the University Staff. Sit on the Student/Staff Committee to discuss issues within the department raised by the students |

VOLUNTEER ACTIVITIES

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| MAY 2022 | Volunteer |
| JAN 2022 | Durham Foodbank Assisted with the distribution of food to people in need. |
| DEC 2021 | Teacher |
| JUN 2021 | Casa de la Sal Support children with HIV on various Mathematics and English Language assignments. |
| SEP 2019 | Teacher |
| MAR 2019 | University Student Council (CEU México) Provide tools to university students to help develop their academic, professional and personal skills, to facilitate their employment and the definition of their life project. |
| MAR 2019 | Volunteer |
| SEP 2018 | Adopt a Talent Program (PAUTA) Encourage scientific vocation so that those children and adolescents who like science and have outstanding skills, find a space where they can share their interest and learn from each other. |

PROFESSIONAL MEMBERSHIP

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| SEP 2019 | Fellow |
| JAN 2017 | Thematic Network of Black Holes and Gravitational Waves (Red ANYOG, CONACYT). |
| DEC 2019 | Student Associate |
| JAN 2016 | Institute of Nuclear Sciences, UNAM. |
| JAN 2016 | Student Associate |
| JAN 2015 | Institute of Physics, UNAM. |

PRESENTATIONS AND POSTER SESSIONS

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| OCT 11, 2017 | Poster Presentation at LX NATIONAL CONGRESS OF PHYSICS. Monterrey, Mexico Presentation of a poster about my undergraduate thesis "Numerical Study of Vlasov Equation in the Schwarzschild Metric". |
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SCHOLARSHIPS, AWARDS, HONOURS AND ACCOMPLISHMENTS

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| 2017 | Scholarship awarded for Conclusion of Project |
| 2016 | Support Program for Research Projects and Technological Innovation (PAPIIT). |
| 2016 | Scholarship awarded for Conclusion of Undergraduate School |
| 2015 | Support Program for Research Projects and Technological Innovation (PAPIIT). |

REFERENCES

NAME: Dr. Tobias Weinzierl
OCCUPATION: Professor in the Department of Computer Science at Durham University
LINKEDIN: tobias.weinzierl@durham.ac.uk

NAME: Dr. Charles Mueller
OCCUPATION: Senior Engineer at Amazon
LINKEDIN: <https://www.linkedin.com/in/charles-n-mueller/>

NAME: Dr. Fernando Herrera
OCCUPATION: Senior Data Engineer at Revolut
LINKEDIN: <https://www.linkedin.com/in/fernando-jose-herrera-elizalde-76a32790/>

NAME: Dr. Miguel Alcubierre
INSTITUTION NAME: Institute of Nuclear Sciences, UNAM.
OCCUPATION: Director, Researcher, Teacher
EMAIL: malcubi@nucleares.unam.mx

UPDATED ON APRIL 4, 2024

Master of Science in Scientific Computing and Data Analysis

Durham University

Grades

| COURSE | GRADE | CREDITS |
|---|---------------|-------------|
| Project | 7.8 | 60 |
| Professional Skills | 7.92 | 15 |
| Core Ia: Introduction to Machine Learning and Statistics | 9.15 | 15 |
| Core Ib: Introduction to Scientific and High-Performance Computing | 7.95 | 15 |
| Performance Engineering and Advanced Algorithms | 7.5 | 15 |
| Advanced Statistics and Machine Learning: Foundations and Unsupervised Learning | 9.0 | 15 |
| Advanced Statistics and Machine Learning: Regression and Classification | 9.15 | 15 |
| Earth and Environmental Sciences | 6.76 | 30 |
| | Total Credits | 180 |
| | GRADE | Distinction |

Bachelor of Science in Physics

National Autonomous University of Mexico (UNAM)

Grades

| COURSE | GRADE | CREDITS |
|--|-------|---------|
| Differential and Integral Calculus I | 07 | 18 |
| Algebra | 10 | 10 |
| Computer Science | 10 | 6 |
| Analytic Geometry I | 08 | 10 |
| Differential and Integral Calculus II | 10 | 18 |
| Contemporary Physics | 09 | 6 |
| Vector Mechanics | 9 | 12 |
| Analytic Geometry II | 09 | 10 |
| Mechanics Laboratory | 10 | 6 |
| Collective Phenomena | 10 | 12 |
| Collective Phenomena Laboratory | 09 | 6 |
| Linear Algebra I | 10 | 10 |
| Differential Equations I | 08 | 10 |
| Optics | 09 | 12 |
| Linear Algebra II | 10 | 10 |
| Differential and Integral Calculus III | 07 | 18 |
| Electromagnetism I | 9 | 12 |
| Electromagnetism Laboratory | 10 | 6 |
| Tensor Calculus | 9 | 10 |
| Differential and Integral Calculus IV | 07 | 18 |
| Introduction to Quantum Physics | 10 | 12 |
| Optics Laboratory | 10 | 6 |
| Thermodynamics | 09 | 12 |
| Advanced Mathematics of Physics | 10 | 10 |
| Computational Physics | 10 | 12 |
| Quantum Mechanics | 09 | 12 |
| Complex Variable I | 10 | 10 |
| Selected Topics of Mathematics and Theoretical Physics | 10 | 6 |
| Electromagnetism II | 08 | 12 |
| Electronics Laboratory | 10 | 6 |
| Statistical Physics | 10 | 12 |
| Contemporary Physics Laboratory I | 10 | 6 |
| Complex Variable II | 10 | 10 |
| Analytical Mechanics | 10 | 12 |
| Relativity | 09 | 06 |
| Introduction to Elementary Particle Physics I | 10 | 06 |
| Dynamics of Deformable Bodies | 10 | 12 |
| Atomic Physics and Condensed Matter | 09 | 06 |
| Nuclear and Subnuclear Physics | 09 | 06 |
| Contemporary Physics Laboratory II | 10 | 06 |
| Topology and Differential Geometry for Physics | 10 | 06 |
| Selected Topics of Relativity, Cosmology and Gravitation I | 10 | 06 |
| Selected Topics of Computational Physics I | 10 | 06 |
| English Language | AC | 00 |
| Total Credits | | 418 |
| OVERALL SCORE | | 9.37 |