

# ALEXANDER FALK

## Profile:

Software Developer, MSc. Computer Game Engineering, with experience in the games and the space industry. Credits on the games *The Lego Movie 2 Videogame* (2019), *Iron Harvest* (2020) and *Lego Star Wars: The Skywalker Saga* (2022). Working mainly on Gameplay elements using C++ and C#.

MPhys with honours in Astrophysics developing problem solving & critical thinking skills. I got the chance to fulfil my passion for acquiring scientific knowledge. I also gained experience in data analysis using Python. With special interest I developed simulations of complex planetary systems.

Internationally experienced and multi-lingual, living, studying and working in several countries across the globe and always keen to work with different people and cultures. Dual Citizenship from Germany and El Salvador

**Portfolio:** <https://www.alexander-falk.com/>

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## WORK EXPERIENCE

since 07/2021

### Technology Consultant

**Salt And Pepper Technology GmbH**, Bremen, Germany

In project as a **Software developer** at **OHB Digital Connect**.

Creating a web-based app to visualise satellite orbits with control over simulation duration and speed.

Working on flight dynamics interfaces for Satellite ground systems using RESTful API

Keywords: C#, .Net, Blazor, WebGL, Visual Studio, Git, Microservices, RESTful, ASPNet, SQL

12/2019 - 06/2021

### Senior Programmer

**King Art GmbH**, Bremen, Germany

Implementing all "abilities" for all units in the game "Iron Harvest" (2020) as well as adding new units from the ground up after release in close collaboration with designers, animators and artists.

Part of the taskforce to ensure that units are complete and implemented to specification.

Keywords: C#, Unity Engine, SVN, Visual Studio, Game logic, Maths/Linear Algebra

04/2018 – 10/2019

### Junior Game Mechanics Programmer

**Tt Game Studios**, Knutsford, United Kingdom

Bug fixing in various systems of the previously released game *Lego Worlds* which lead to a credit in *The Lego Movie 2 Videogame* (2019).

Creating game mechanics on "Lego Star Wars: The Skywalker Saga" (2022). Working as a team member as well as cooperating with other disciplines in order to create game mechanics from the ground up. Personally, I was responsible for "The Force" mechanic, involving physics and maths problems that needed to be solved and working in collaboration with designers and VFX artists

Keywords: C++, In-house engine, Perforce (Source Control), Agile development, Visual Studio, Game logic, Physics, Maths/Linear Algebra, Unreal Engine 4 (for an internal Game Jam)

## RESEARCH

06/2016 – 09/2016

### Institute for Astronomy summer research student

**The University of Edinburgh**, Edinburgh, United Kingdom

"Analysing the creation of free-floating planets by ejection from planetary systems" with supervisor Prof. Ken Rice. Writing code (in python) to calculate initial conditions for planetary systems in a star cluster, running n-body simulations and computing orbital parameters.

Keywords: Python, Linux, N-Body Physics simulations (N objects that affect each other with gravity)

06/2015 – 09/2015

### Institute for Astronomy summer research student

**The University of Edinburgh**, Edinburgh, United Kingdom

Simulating orbit type and stability of an extrasolar planet around a binary star" with supervisor Dr. Alex Mead. Creating and running n-body simulations of a single planet orbiting a binary star and analysing computational data.

Keywords: Python, Linux, N-Body Physics simulations (N objects that affect each other with gravity)

## EDUCATION

- 07/2017 – 07/2018 **Master of Science (MSc) Computer Game Engineering** with distinction  
**Newcastle University**, Newcastle, United Kingdom  
*Modules including Advanced C++, Advanced Graphics for games, Advanced Physics and Networking for games, as well as a group project involving 8 programmers to create a game from scratch. In this project we had to create a multiplayer game where up to 4 players can battle each other to cover as much of the game area with their own colour paint. I took on the role of creating the networking for this game as well as implementing some gameplay features and handling any merging issues our team had within git.*  
**Keywords:** C++, OpenGL, Graphics, Physics, GitHub, Unreal Engine 4 (for a prototype), Agile, Networking, Nvidia CUDA
- 09/2012 - 05/2017 **Master of Physics (MPhys) with Honours in Astrophysics**  
**University of Edinburgh**, Edinburgh, United Kingdom  
*Completed the 5 year "Master of Physics (MPhys) in Astrophysics" degree.*  
*Topics included: Computational Modelling, 3D climate modelling, Linear Algebra, Software Engineering, Functional Programming.*  
**Master's Project:** "Variability in HR 8799bcd" with Dr. Beth Biller  
*Processing and analysing astronomical images by the use of model fitting.*  
**Senior Honours Project:** "Planet-Planet scattering as the origin of Free-Floating planets" with Prof. Ken Rice  
*Running N-body simulations of a system of multiple planets and analysing ejection*  
**Keywords:** Python, Java, Haskell, GitHub, Visual Studio, Image Analysis, Physics Simulations

## SKILLS

- Languages **German** (Mother tongue), **English** (Fluent), **Spanish**
- Programming Languages Professional experience with **C++** (2 years) and **C#** (2 years), **Javascript** (basics)  
University level experience with **C++**, **Python** and **Java**
- Games Development Professional experience with **Unity3D** (2 years)  
University level experience with **Unreal Engine**, **OpenGL** and **CUDA**.
- Technologies **Visual Studio**, **.Net**, **RESTful**, **Databases** (SQL), **Git**, **Perforce**, **SVN**

**Critical thinking and problem solving** was a key learning outcome of my education, in both school and University and have been an important part during my career

## PUBLICATIONS

**Anthropogenic forcings and associated changes in fire risk in Western North America and Australia during 2015-2016.** / Tett, Simon; Falk, Alexander; Rogers, Megan; Spuler, Fiona; Turner, Calum; Wainwright, Joshua; Dimdore-Miles, Oscar; Knight, Sam; Freychet, Nicolas; Mineter, Michael; Lehmann, Caroline.a  
In: Bulletin of the American Meteorological Society, 05.07.2017.

## INTERNATIONAL EXPERIENCE

- El Salvador** *Place of Birth (1994-1995)*
- Germany** *School and Work (1995-1997, 2002-2006, 2008-2010, 2019-present)*
- Argentina** *School (1998-2001)*
- Scotland** *School and University (2006-2008, 2012-2017)*
- The Netherlands** *School (2010-2012)*
- North Macedonia** *Volunteer work (Summer 2011)*
- England** *University and Work (2017-2019)*

## VOLUNTEER WORK

08/2015 – 08/2017

### **Webmaster**

**Edinburgh University Physics Society Committee member**, United Kingdom

- *Renewing the domain and maintaining the website*
- *Organizing events, e.g. a trip to the observatory*

2010 – 2012

### **Charity groups within the International School of Amsterdam (ISA):**

#### **Habitat for Humanity**

*Fundraising and building project in Macedonia*

#### **Japan Earthquake Relief**

*Fundraising for the victims of the 2011 earthquake in Japan*

#### **Green Team**

*Fundraising, organizing projects and getting the school to be more environmentally friendly. This led to getting the school an Eco-Schools award.*

#### **Water Aid**

*Fundraising money for clean water and sanitation in Kenya*

#### **Fairtrade team**

*Promoting Fairtrade and Selling Fairtrade goods*

#### **ISA Special Olympics**

*Organizing a day of activities for mentally and physically disabled children and looking after these during the day*

## INTERESTS & HOBBIES

Video games, Music, Playing Guitar, Languages, Astronomy, Science, Space, Photography, Travel