

Gorm Lai

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PROFILE

Currently a late-in-life PhD Student at Goldsmiths, focusing on mixed-initiative co-creative artificial intelligence and evolutionary techniques.




I am an experienced senior graphics & game engine programmer, with a swiss army knife certificate in cross-platform development and experimental game development. I have worked on 17 commercial games since 2004; among them the multiple award winning LIMBO as well as the 2015 BAFTA winner The Dumping Ground.


Besides video games, my portfolio includes virtual reality, and a couple of interactive installations and non-game applications. I am a cross-platform specialist, and have just in the last couple of years, helped bring games to Windows, OS X, Linux, iOS, Android, Oculus Rift and more. Going back, I have worked on most modern platforms (Xbox 360/PS2/embedded devices/ etc).

I am very interested in experimental game development, and have co-founded the Nordic Game Jam as well as the Global Game Jam.

PROFESSIONAL OVERVIEW

GAMES

Screenshot	Game Title	My Role	Platform & Link	Developer	Publisher	Year Released
	Ynglet	Programmer (C++ / Unity)	Steam	Triple Topping, Niffias	Tripple Topping	Release expected 2020
	Fugl	Lead Programmer (C++)	Steam , soon iOS / Android / Oculus and more	Team Fugl	Kotori Studios	Steam Early Access in September 2017. Full release expected late 2020
	LIMBO	Porting programmer (C++)	OS X / Mac : Also available on Steam, and many other stores and platforms.	Playdead Games	Playdead Games	Initial mac version late 2011. 64 bit mac version in winter 2018. Android 64 bit launched spring 2019. Chromebook summer 2020

	Dumping Ground	Programmer (Unity)	iOS / Android / Web	Somethin' Else	CBBC	Early 2015
	M.U.L.E. Returns	Game Designer & Programmer (C++ / Objective-C / Java)	iOS Android , Windows (Steam), OSX coming up	Comma 8 Studios	Self published	Winter 2013
	Cell Invaders (Commercial prototype - winner of Summer of Science Game Jam)	Game Designer & Programmer (Unity)	iOS Android	Kotori Studios Ltd / Cool Cherry Trees	Royal Society	Winter 2013
	Mashtun	Programmer (Objective-C)	iOS	Somethin' Else	Chivas Regal	Early 2013
	Mission	Programmer (Objective-C)	iOS	Somethin' Else	Universal	Late 2012
	Feng Shui	Game Designer & Programmer (Unity)	iOS	Red-Shirt Consulting	Digital UFO	Investor prototype (2010)
	Danish Championships in Sun Bathing	Game Designer & Programmer (Flash)	Flash / Web	3 Lives Left	Danish Radio and Television	Summer 2008
	The Ark	Game Designer & Programmer (Java)	Java / Web	3 Lives Left	NA	Funded but never published (2008)
	Faith and a .45	Engine Programmer (C++)	PC / Xbox 360 / PS3	Deadline Games	NA	Never published (2007)
NA	Unannounced title	Engine Programmer (C++)	PS2	Deadline Games	Electronic Arts	Publisher changed developer (2007)
NA	Yahtzee	Game Designer & Programmer (C++)	OpenTV / Set-top Box	Craftwork	Sky	2005



NA	Cruise Control	Game Designer & Programmer (C++)	OpenTV / Set-top Box	Craftwork	Sky	2005
NA	Sudoku	Game Designer & Programmer (C++)	OpenTV / Set-top Box	Craftwork	Sky	2005
NA	Pool Multi-player	Game Designer & Programmer (C++)	OpenTV / Set-top Box	Craftwork	Sky	2004

INTERACTIVE INSTALLATIONS, AR, VR AND HARDWARE


Project Description	My Role	Keywords	Client	Year
Interactive kiosk app for consumer show	Lead developer on project. I designed and help build the application within time and budget.	C#, WPF, Xaml, Windows, touch technology	Engage Works	2015
Content Browser	Software lead and main developer on project.	C#, WPF, Xaml, Windows, touch technology	Engage Works	2015
Interactive Collaborative Workspace	Software lead on project. I architected the software part of the space, as well as designed and implemented the main user facing application.	C++, OpenGL, REST, Windows, Touch technology,	Engage Works	2015
USB Dongle	I designed, developed and deployed the application running on the dongle.	Arduino, Windows, C	Engage Works	2015
Various VR related projects	I worked as a student programmer in a virtual reality center. I assisted on projects in the center and acted as an assistant teacher on a computer graphics course.	C++, OpenGL, Linux / Unix, Motion Capture, VR, Active Stereo, Genlock, Multi-processor, Blue screening, midi	Center for Advanced Visualization & Interaction (http://cavi.dk).	2001 - 2004

OTHER APPLICATIONS

Screenshot	App Title	Skills Used	Platforms and Store Link	Home page link	Year
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	Papers	XCode, Visual Studio, SQLite, Objective-C, C++, .Net	Mac Windows iOS	http://papersapp.com/	2013 - 2014
	One Gratis	XCode, UIKit, CoreVideo, SQLite, CoreAnimation, JSON, Restful services, Objective-C, C++, Cryptography	iOS	http://www.onegratis.com/	2010 - 2011

WEB APPLICATIONS

Screenshot	App Title	Skills Used	Home page link	Year
	Game Jam in a Box	Python, Django, JavaScript, HTML,	http://gamejaminabox.org/	2012

PROFESSIONAL EXPERIENCE

INDEPENDENT PROGRAMMING CONTRACTOR, UK 2012 – Present
INDEPENDENT PROGRAMMING CONTRACTOR, DENMARK 2009 – 2012

I mainly specialize in game development for desktop and hand-held devices, including front-end as well as back-end work. I can offer full-service contracts and complete scalability during the lifetime of a project, through my network of freelance contacts. I also have a good understanding of finance, and have worked as a front-office contractor for very satisfied clients in the finance sector (*reference available*). Most contracts are international.

Technologies: C++, C#, Objective-C, SQLite, MS SQL, XCode, Visual Studio, iOS, Android, Massively multi-threaded applications, OpenGL, SDL2. *References available upon request*

CO-OWNER & CTO, 3 Lives Left, Copenhagen, DK 2007 - 2009

3 Lives Left were doing small, dynamic online worlds for games. All games ran in the browser, either through Java or Flash/Action Script 3. Our primary product, The Ark, had a small distributed client with a central host for acting as a lobby, hosting all content for download on demand and arbiting important game play decisions. I was CTO and responsible for the architecture and main code of the game.

Technologies: C++, C#, Silverlight, ASP .Net, SQL, Python, Java, OCaml, Visual Studio, Linux, Windows, Flash, Mercurial, Apache, OpenGL. *Reference available upon request*

CORE ENGINE PROGRAMMER, Deadline Games A/S, Copenhagen, DK 2005 – 2007

I worked on the core components of Deadline Games' next gen games engine for PC and consoles. Major focus areas include integration of PhysX, streaming and asset systems, network, scene graph design, custom scripting languages and property systems. I also worked on file formats for the Xbox 360, 3D studio max plug-ins, animation systems, and more. Focus was always on clean designs and efficient implementation.

Technologies: C++, Xbox 360, Windows, threading, networking, PhysX, Havok, 3D Studio Max, Perforce, DirectX. *Reference available upon request*

GAMES DEVELOPER, Craftwork ApS, Copenhagen, DK 2004 – 2005

Craftwork ApS is a company making games for set-top boxes, with a focus on delivering cutting edge and technologically superior solutions on a limited hardware platform. I had the responsibility of coordinating with the customer, doing game designs as well as implementing those designs. The games were all targeted towards the OpenTV platform.

Technologies: C++, C, OpenTV, Windows, MPEG, set-top boxes. *Reference available upon request*

SYSTEMS DEVELOPER, Scientific Database Systems, Aarhus, DK 2000 – 2001

Scientific Database Systems created CIP DB, a customer-adapted database for storing and comparing blood samples and patient data. The project lead left half way through the project, and I took over in that role. As part of my responsibilities, I did a lot of traveling to talk with customers. Development was done using C++ and Java.

Technologies: C++, Java, SQL, Windows

ACADEMIC OVERVIEW

EDUCATION

PhD Student in Computing at Goldsmith College, University of London. Started September 2018. Completion expected by September 2025.

Masters in Computer Science and Math, DAIMI, Aarhus University Completed June 2004

Bachelors in Computer Science and Mathematics DAIMI, Aarhus University Completed June 2001

I did my masters thesis on the spectral representation of light in a global illumination simulation using photon mapping. Photon mapping is a monte carlo based algorithm used to model the flow of light particles.

For the bachelor's thesis, I was part of a group building a Phase Vocoder. Phase vocoding is a technique for transforming sound samples from the time domain -> frequency domain -> time domain, thereby enabling the independent manipulation of pitch and length of a sample. For example, changing the pitch of a sample, without changing the playback speed.

ACADEMIC CAREER

Cooperating Research Fellow, Graduate School of Informatics, Nagoya University, Japan
June 24 2019 to March 31 2020

PUBLICATIONS

Gorm Lai, Frederic Fol Leymarie and William Latham (2022). On Mixed-Initiative Content Creation for Video Games. in IEEE Transactions on Games. doi: 10.1109/TG.2022.3176215.

Gorm Lai, Annakaisa Kultima, Foaad Khosmood, Johanna Pirker, Allan Fowler, Ilaria Vecchi, William Latham, Frederic Fol Leymarie (2021). Two Decades of Game Jams. To appear in Proceedings of the Sixth Annual International Conference on Game Jams, Hackathons, and Game Creation Events.

Gorm Lai, Frederic Fol Leymarie, William Latham, Takaya Arita, Reiji Suzuki (2021). Virtual Creature Morphology - A Review. Computer Graphics Forum 40 (2), 659-681

Gorm Lai, William Latham, Frederic Fol Leymarie (2020). Towards Friendly Mixed Initiative Procedural Content Generation: Three Pillars of Industry. Proceedings of the 15th International Conference on the Foundations of Digital Games.

Gorm Lai, Kai Erenli, Foaad Khosmood, William Latham (2019). Introducing: the game jam license. Presented at Game Jam Workshop at FDG 2019. Proceedings of the 14th International Conference on the Foundations of Digital Games.

Allan Fowler, Gorm Lai, Foaad Khosmood (2015). Trends in organizing philosophies of game jams and game hackathons. In Journal GJ Workshop. FDG2015. June 2015. ([pdf](#))

Allan Fowler, Foaad Khosmood, Ali Arya, Gorm Lai (2013). The global game jam for teaching and learning. In Journal Proceedings of the 4th Annual Conference on Computing and Information Technology Research and Education New Zealand:28-34, October 2013 ([pdf](#))

Gorm Lai, Niels Jørgen Christensen (2007). A compression method for spectral photon map rendering. Short Proceedings of the 15-th International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision'2007. Václav Skala-UNION Agency ([pdf](#))

Gorm Lai (2004). A Spectrally Based Global Illumination System (winning poster). Graphical Visionday 2004 at Danish Technical University (DTU).

TEACHING & SUPERVISING EXPERIENCE

Game Engine Design, IT University, Copenhagen, Denmark Fall 2010
I designed the curriculum and taught the Game Engine course in the fall of 2010. The course was 15 ECTS, and had a focus on architecting, designing and implementing a game engine in C++. In earlier years, the course had gotten very bad reviews with different lecturers, so when I took over, I redesigned the whole course from scratch. Luckily I was successful, and at the evaluation at the end of the semester, I got outstanding scores on most of the parameters of quality, satisfaction and relevance.

Raster Graphical Systems, 3D and Virtual Reality, Spring 2003
Department of Computer Science, Aarhus University, Aarhus, Denmark.

MASTER THESIS SUPERVISOR, Different Universities, Denmark 2006 – 2010
I have supervised lots of students writing their master thesis. Especially in recent years, these students have tended to get top marks.

TEACHING ASSISTENT, Center of Advanced Visualization and Interaction (CAVI), Aarhus University, DK 2001 – 2004
At CAVI (Center for Advanced Visualization and Interaction) my primary responsibility was supporting the teaching activities at the Center. I helped students and acted as a teaching assistant preparing example programs for the lecturer. I was co-teacher at a class, with a focus on ray tracing, global illumination and tone mapping (HDR). *Technologies:* C++, Performer, OpenGL, Silicon Graphics mainframes, midi, System 6000, motion-capture, holo-bench, blue screening, infrared tracking equipment, Windows, Linux, Unix

GUEST LECTURES AND TALKS

"AI Supported Tools for Game Development", July 2022
DEVELOP Conference, Brighton, UK

"A Survey of Mixed-Initiative Digital Content Creation Methods for Video Games", FDG 2021, Online, Workshop on User Experience of Artificial Intelligence in Games at The Foundation of Digital Games	August 2021
"Using CC for Video Games", Online Creative Commons Global Summit	October 2022
"Being a Game Developer & The Changing Tides", Leeds Trinity University,	February 2020
"Keynote – Global Game Jam", at Goldsmiths College, University of London	January 2020
"Being a Game Developer & The Changing Tides", Leeds Trinity University,	February 2019
"Keynote – Global Game Jam", at Goldsmiths College, University of London	January 2019
"3 talks; A Career In Games, Game Jam Intro & Fugl – A Case Study", at Norwich University of the Arts	December 2018
"Game Jams", at the Continue Workshop at The British Library, London.	July 2018
"Being a Game Developer & The Changing Tides", at Leeds Trinity University	February 2018
"Keynote – Global Game Jam", at York University.	January 2018
"Being a Game Developer", at Leeds Trinity University	November 2017
"Game Jams", at Summer PIT 2017 - Hackathons, Game Jams, The Demo Scene and other kinds of rapid design event, Aarhus University, Aarhus, Denmark	August 2017
"The Inner Workings of a VR Capable Game Engine", At Vision Days Conference 2017, Danish Technical University (DTU), Lyngby, Denmark	May 2017
"20+ Years of Creative Coding – Tips & Tricks Every Game Developer Should Know", at Universidad de las Ciencias Informáticas (UCI), Havana, Cuba, Global Game Jam 2017	January 2017
"How To Make Your Own Game Engine?", at Intel Buzz , London, UK.	August 2015
"Making A Game Engine Is Easier Than You Think", at DEVELOP , Brighton, UK	July 2015
"Keynote – Global Game Jam", at Caledonian University, Glasgow, Scotland	January 2015
"3 Roundtables on Mobile Game Development", at GDC , San Francisco, United States	March 2014
"Game Jams and Hobbyists", at Aalto University, Helsinki, Finland	December 2013
"The Global Game Jam – Experimenting on Principle", at University of Bedfordshire	November 2012

"Global Game Jam", at Tech-Hui , Honolulu, Hawaii, United States	December 2011
"How To Make A Playstation 1 Game In 48 Hours", at Nordic Game , Malmö, Sweden	April 2010
Speaker at GDC , San Francisco, United States.	March 2010
Speaker at DEVELOP , Brighton, UK.	July 2009
"The Global Game Jam: Nordic Beginnings", Nordic Game , Malmö, Sweden.	May 2009
Speaker at GDC , San Francisco, United States.	March 2009

CONFERENCES

Workshop Co-Chair, the 16th International Conference on the Foundation of Digital Games, 2021.

Proceedings Chair, the 6th International Conference on Game Jams, Hackathons and Game Creation Events, 2021.

Proceedings Co-Chair, the 5th International Conference on Game Jams, Hackathons and Game Creation Events, 2020.

Member of the Program Committee, the 14th International Conference on the Foundation of Digital Games, 2019.

RESEARCH

The aim of my PhD project is to research algorithms and human / computer interaction methods that can be used to create a tool that will let a game designer direct and evolve believable digital creatures, from nothing to full model using machine learning, with the purpose of being able to directly use and export those creatures' animations and meshes into existing asset pipelines. The ideal output of such a tool / set of algorithms, is a polygonal mesh with a bone structure and several weighted animations similar to the output of industry standard 3d modelling and animation packages such as Maya and 3D Studio Max, potentially saving modelers and animators thousands of hours of work.

COMMUNITY ENGAGEMENT

HIGHLIGHTED ACHIEVEMENTS AND AWARDS

- **2018**
 - Re-elected as a member of the board of directors for Global Game Jam Inc for another 2 years.
- **2017**
 - Re-elected for a 3rd term as President of the board of directors for Global Game Jam Inc.
 - Member of the Advisory Board for the Nordic Game Jam
 - October, Winner of IndieCade's Decade of Impact Award.
- **2016**
 - Re-elected for a 2nd term as President of the board of directors for Global Game Jam Inc.
- **2015**
 - Elected as President of the board of directors for Global Game Jam Inc.
- **2012**
 - Founded [London Indie Game Developers](#) meetup group, which now has 2700+ members.
- **2009**
 - Received the [IGDA's MVP](#) Award

- Co-founded the [Global Game Jam](#)
- **2006**
- Co-founded the [Nordic Game Jam](#)

OTHER RELEVANT SKILLS

- Speaks and write fluent English
- Speaks and write fluent Danish
- Speaks and write basic Italian
- Experience organizing a small team
- Experience teaching and supervising students
- Experience with the challenges and benefits of working remotely