

Kornél Lehócz

Software development consultant

klehocz@scarablab.com

www.scarablab.com

Custom software development algorithm engineering performance optimization GPU programming
image processing computer graphics computer vision deep learning

Skills and experience

- I am fluent in C++ (over 15 years of professional experience).
- I have excellent knowledge of image processing techniques, and am capable of designing cutting edge algorithms.
- I have a lot of experience working on 3D rendering, engine architecture, shaders, and visual effects for games.
- Knowledge of OpenGL / OpenGL ES, and lots of earlier experience with Direct3D.
- Good knowledge of computer vision algorithms - classic, as well as deep learning based approaches.
- Broad knowledge of AI and machine learning with hands-on experience training deep neural networks.
- I am adept in profiling and optimizing code for speed and memory usage. I know how to identify and resolve various bottlenecks on the CPU and GPU.
- Experienced with developing GPGPU applications and proficient with OpenCL (very similar to CUDA).
- Application GUI programming experience using the Windows API, wxWidgets, and Qt.
- Experience with the Adobe Photoshop and After Effects SDK-s.
- Lots of experience with the 3ds max SDK.
- I have experience working with Visual Studio, Xcode, Git, Subversion (SVN), Jira, VTune, CMake.
- Experience with numerous libraries, including: STL, Boost, OpenCV, IPP, SQLite, NumPy, and TensorFlow.
- I have a lot of experience with multi-threaded programming (POSIX threads, Windows API, and OpenMP).
- I have plenty of experience in MC680x0 and x86 (including SSE) assembly programming.
- I also programmed in other languages, such as C, Objective-C, C#, and Python.
- Other skills: macOS, iOS, Unix, Linux, TCP/IP sockets, design patterns, SQL, XML, basic HTML and CSS.

Language proficiencies

Hungarian - native

German - professional working proficiency

English - full professional working proficiency

Swedish - elementary

Education

Programming/Mathematics BSc level degree from the University of Debrecen.

Work history

Founder, Principal Programmer

Scarab Labs

May 2008 – present

Erlangen, Germany / Stockholm, Sweden

I created Scarab Darkroom - a digital camera raw converter and photo editor, and various Adobe Photoshop and After Effects plug-ins. I developed numerous image processing algorithms, including a fast, SIMD-friendly, high quality demosaic algorithm, and several noise filters, among them a deep learning based approach. I also did contract work for various clients during this period.

Robotic Algorithm Developer (contract)

Unibap

July 2017 – December 2017

Uppsala, Sweden / remote

Development of a robotic grasp planning algorithm.

Vision Algorithm Developer (contract)

Delphi Automotive

September 2016 – March 2017

Wuppertal, Germany / remote

I worked in the computer vision algorithm team on an advanced driver assistance system (ADAS) - evaluating, improving algorithms, and optimizing them for a Texas Instruments embedded DSP. Systems worked on: lane departure warning, camera calibration, camera processing.

Software Development Consultant (contract)

ThyssenKrupp

December 2014 – May 2015

Kiel, Germany / remote

Optimizing a 3D CAD data conversion process.

Senior Programmer (contract)

Atomic Motion

January 2008 – April 2008

Budapest, Hungary

I worked on the PC / Xbox 360 game Raven Squad, making improvements to an existing 3D engine.

Programmer

Eidos Hungary

April 2006 – July 2007

Budapest, Hungary

I worked on Battlestations: Midway. I programmed visual effects, fixed bugs, and resolved frame rate issues. The game became about 15% faster thanks to my optimizations. Later I was involved in creating the prototype of Battlestations: Pacific. I wrote shaders and implemented new features in the 3D engine.

Graphics Programmer

Bizarre Creations

September 2005 – March 2006

Liverpool, UK

I worked on the company's proprietary 3D engine and on visual effects specific to The Club. I implemented HDR rendering and many other features in the engine, and was in charge of post-processing effects.

Programmer (contract)

T5 Labs

May 2003 – July 2005

London, UK based company

I worked on T5 Labs's game streaming (cloud gaming) technology, specifically on the server side low latency, GPGPU video encoder.

3D Engine Programmer (contract)**October 2000 – October 2002**

Invictus Games

Debrecen, Hungary

I worked on the company's proprietary 3D engine for the PC racing game Street Legal. I wrote all Direct3D specific parts of the engine, and was also involved in developing the content pipeline. I created several plug-ins for 3ds max, including a feature packed export plug-in. I also helped finish Invictus's earlier game, 1NSANE.

Software Engineer**July 1998 – July 1999**

Mindmaker

Budapest, Hungary

I worked on the Prody Parrot 2.0 intelligent personal assistant for Windows.

Hobby

I have started learning programming at an early age with the dream of one day becoming a game programmer. I wrote my first 3D engine in pure assembly in 1995. I became involved in the Amiga [demoscene](#), and was a member of the groups Frame 18 and Scoopex. I also enjoy playing video games. One of my recent hobbies is photography. This has inspired me to take an interest in the image processing algorithms used to make the most out of digital camera images.

Softography

Scarab Darkroom (first public release in 2009, latest update 2018)

A digital camera raw file converter and photo editor, which excels with its speed and ease of use.

<http://www.scarablabs.com/scarab-darkroom>

Custom Photoshop plug-ins for Stoll AG & Co. KG (2018)

Three plug-ins to help with verifying textile patterns. (Windows/Mac)

Scarab Star Filter 1.0 - 2.0 for Adobe After Effects (released in 2011, 2012)

A plug-in for applying a star filter effect to highlights in video footage.

<http://www.scarablabs.com/star-filter-after-effects>

T-Seps 2.0 (released in 2010)

A Photoshop plug-in for making colour separations for T-shirt printing. (Windows/Mac)

<https://t-seps.com>

Scarab Star Filter 1.0 - 2.0 for Adobe Photoshop (released in 2009, 2010)

A filter plug-in for applying a star effect to highlights in an image. (Windows/Mac)

<http://www.scarablabs.com/star-filter-photoshop>

Raven Squad: Operation Hidden Dagger (released in 2009)

A tactical shooter for Xbox 360 and PC.

<http://www.youtube.com/watch?v=0KS6NbuqO8M>

Codename Panzers: Cold War (released in 2009)

A real-time strategy game for the PC published by Atari.

<http://www.youtube.com/watch?v=GIAtxcmfUuc&hd=1>

Battlestations: Pacific (released in 2009)

A WWII action strategy game for Xbox 360 and PC.

<http://www.youtube.com/watch?v=23WEAyGLF50>

The Club (released in 2008)

A 3rd person shooter published by Sega for Xbox 360, PlayStation 3, and PC.

<http://www.youtube.com/watch?v=i2lauM9ue0w>

Battlestations: Midway (released in 2007)

A WWII action strategy game for Xbox 360 and PC. No. 1 hit in the UK.

http://www.youtube.com/watch?v=i8WXF7_LS1g

Street Legal (released in 2002)

A racing game published by Activision Value.

<https://www.youtube.com/watch?v=B8SsbiFMxYo>

Insane (released in 2000)

An off-road racing game published by Codemasters. 'Best Off-Road Game Ever' – PC Gamer

<https://www.youtube.com/watch?v=YRWxtphpYE0>

Prody Parrot 2.0 (released in 1999)

An intelligent assistant for Windows with speech synthesis, voice recognition, and many other features.

Water Effect Demo

Entry for the August '99 programming contest on www.flipcode.com. Achieved 2nd place out of 23.

Scoopex - Pulsar (released in 1999)

An Amiga 64k intro.

<https://www.youtube.com/watch?v=QXCM6uikUkM>

Frame18 - Atmosphere (released in 1997)

An Amiga demo.

<https://www.youtube.com/watch?v=YJpLuohq9b8>

Frame18 - Kernel '97

Party invitation intro for Amiga.

Frame18 - Cyclotron (released in 1997)

An Amiga demo.

Resolution - Entropy (released in 1996)

An Amiga 40k intro. Achieved 2nd place at the Amiga intro competition at Scenest '96.

Publications

Raymond Chandler's Philip Marlowe - Hungarian publication (published in 2004)

I translated this book together with my father. It features a collection of short stories by various authors, paying homage to Raymond Chandler. Published by Indaba Bt.