Contact Info

huseyin.tugrul.buyukisik@gmail.com
www.linkedin.com/in/hüseyin- tuğrul-büyükişik-82459011b (LinkedIn)

No-159, Floor-1, Index-5,
Park-Apartment,
Atatürk District
Çiğli - İzmir
Türkiye

Most Important Skills

GPGPU

Algorithm Parallelization

CUDA (C++)

OpenCL

Physics Simulation

Asynchronous Web App

LabView

Multi-threading

Hobbies

Science-fiction movies

Video-gaming

Optimizing algorithms

Experimenting new algorithms

Walking

Hüseyin Tuğrul BÜYÜKIŞIK

Looking for work. Especially CUDA development, with custom CUDA kernels, multiple GPUs, CUDA libraries such as CUB and Thrust. I can also work with OpenCL for other GPUs and other many-core architectures, preferably in C++.

Experience

Turing (Client: Nvidia)

CUDA(C++) Developer (Remote)

October 2024 - September 2025 (1 year)

I wrote more than 90 small programs using CUDA for algorithms:

- Sorting
- Stream compaction
- Reversing, shuffling, element-wise computing, transforming of arrays
- Histogram
- Huffman encoding
- Physics simulations (wave propagation, rigid-body, n-body)
- Collision detection between objects
- Horizontal/vertical hierarchical communication between threads
- Simulated annealing
- Binary search
- Dynamic interpreter
- Image processing
- Circuit simulation
- Matrix exponentiation
- Convolution
- Dynamic messaging between host and device

with warp-primitives, block-wise computations, device-wide computations, cluster launches, asynchronous streams, graphs, custom CUDA kernels and libraries from CUDA (Thrust, CUB).

Project was successful, I contributed 19% of all tasks accepted by Nvidia for this project.

References:

Marcelo Guedes: marcelo.g@turing.com marcelo.guedes@gmail.com

Sreehari Ambuluri: sreehari.ambuluri@gmail.com

Chaitanya Khire: ckhire91@gmail.com

Zero Density (İzmir, Türkiye)
Research and Development Engineer

February 2023 - February 2024 (1 year 1 month)

R&D Engineer

ZeroDensity

February 2023 - March 2024

Traxis-Hub (as features of it)

Noise dampening for digital camera position and rotation sampling data used in studios: this makes seamless augmentation of reality to digital environment easier. Less noise makes it look more real.

For this task, I implemented various filtering algorithms and combined them to get a better noise-reduction quality & performance.
Lens calibration algorithms: calculation of lens distortion on images in C++, multithreading, OpenGL to further improve quality of augmented reality. Unreal images needed to be distorted realistically. This was computed in parallel.
For automated calibration, I implemented a grid pattern reading program that measures distortion by camera on images and tunes distortion parameters automatically.
Filters implemented:

Kalman, Wiener, FFT Tukey Window, FFT Hann Window,
many more

Distortion types:

Inverse distortion using Newton-Raphson convergence

Inverse distortion by using pixel-gater and forward distortion

Distortion using pixel-gather and inverse distortion by Newton-Raphson convergence

Distortion using simple distortion algorithm.

References:
Başak Filibeli (HR): +905398957552

Drugitt Software (Remote, Turkey)

C++ - CUDA desktop app development
Nodejs AWS server application development

January 2017 - January 2019 (2 years 1 month)

Drugitt - cudad engine

Drug discovery helper algorithms to improve performance of protein-folding by use of CUDA C++ in Amazon AWS.

90% of work pipeline was accelerated by single or multiple GPUs. Genetic algorithm, simulated annealing, FFT, small-scale brute-force calculations, random number generation and some more parts were computed in CUDA kernels.

Driver API of CUDA was used to compile better for any future architecture without requiring any re-compilation. Due to this, all kernels were in series of strings and had a code-caching mechanism on PTX-CUDA layer to reduce compilation-related latencies.

Pose estimation of protein/drug molecules gained more speed and improved cost/performance ratio due to having to use less number of servers than CPU- only solutions.

Dimnida Ltd Şti (Izmir, Turkey)

Web Development

January 2015 - March 2016 (1 year 3 months)

- Database management: MS-Sql
- Website development: C# .Net, Javascript, HTML, CSS
- Desktop app: C# winforms

Armateknik Ltd Şti (Izmir, Turkey)

Web Development

January 2014 - January 2015 (1 year)

- Website development: C# .Net, Javascript, HTML, CSS
- Content generation.

Education

Hacettepe University   Physics Engineering

Karşıyaka Anadolu High School

Amateur Work

CUDA Huffman-Decoding and Caching For 2D Terrain Streaming

https://github.com/tugrul512bit/CompressedTerrainCache

OpenCL Multi-GPU Load-Balancing Tool For Custom Kernels

https://github.com/tugrul512bit/libGPGPU

OpenCL Multi-GPU Simulated Annealing

https://github.com/tugrul512bit/UfSaCL

C++ LRU, Direct-Mapped, Multi-Level Async Cache

https://github.com/tugrul512bit/LruClockCache

https://www.youtube.com/watch?v=Ox82H2aboIk

C++ Sparse Linear Adaptive Grid For Collision Detection

https://github.com/tugrul512bit/FastCollisionDetectionLib

OpenCL Virtual C++ Array That Uses Multiple GPUs As Storage

https://github.com/tugrul512bit/VirtualMultiArray

OpenCL C# App To Simulate Large-Scale Space-Ship Battles

https://github.com/tugrul512bit/EpicWarCL

https://youtu.be/Jl68gVsReQk?si=tWdxNMrOf83PijnQ&t=22

C++ Tool To Vectorize CUDA-Like Code Snippets For AVX/SSE

https://github.com/tugrul512bit/VectorizedKernel

Javascript Asynchronous LRU Cache Implementation

https://github.com/tugrul512bit/LruJS

Javascript Asynchronous Video-Stream Cache Implementation

https://github.com/tugrul512bit/SimpleFastVideoStreamCache

C# OpenCL Multi-GPU Kernel Load-Balancer Tool

https://github.com/tugrul512bit/Cekirdekler

C++ OpenCL FASTA Formatted DNA Nucleotide Indexing Tool

https://github.com/tugrul512bit/FastaGeneIndexer

CUDA Tensor-Core Accelerated Gaussian Blur Operation

https://www.youtube.com/watch?v=aWtFs32xV7Y

OpenCL-Accelerated Cellular-Automata (Falling-Sand Simulation)

https://www.youtube.com/watch?v=2BQtZMhCvMI

Parallelization Of Raytracing

https://www.youtube.com/watch?v=POR2AYrklL4

Genetic Algorithm That Creates Images Using Circles With CUDA

https://www.youtube.com/watch?v=zO0fWd7aX9Y

https://www.youtube.com/watch?v=65mddQc1VF8

2D Nbody Algorithm With 4 Million Particles On Low-End GPU

https://youtu.be/gEtuvP_gHUY?si=1ID4dHmQGqo2gk8b&t=16

2D Interactive Fluid Mechanics App On AMD GPU

https://www.youtube.com/watch?v=LGTxZRRwvsI