Kaj Toet

Nijlhof 39
2622CS Delft
Mail: kajvtoet@outlook.com
Website: kajtoet.nl
Phone: 06-43595507
Geboortedatum: 11-12-1989

Summary

I am Kaj Toet, an all-round programmer. Most of my hobby projects encompass innovative features in which I try to combine different technologies and techniques.

I'm especially enthusiastic about everything to do with graphics rendering. In my spare time I also like to tinker with Arduinos and electronics. I'm not shy of trying something different and exploring new technologies.

Education

The Hague University of Applied Sciences
>   Bachelor of Applied Science (BASc),
>   Information and Communication Technology, 2013 - 2015

INHOLLAND University of Applied Sciences
>   Bachelor of Applied Science (BASc),
>   Information and Communication Technology, 2009 – 2013
>   (Classes were canceled, due to shortage of students)

Coornhert Gymnasium Gouda / Luzac College
>   HAVO Diploma (Physics and Technology), 2002 - 2009

Work Experience

Application programmer at The Hague University of Applied Sciences

August 2014 - October 2014 (3 months)

>   A professional assignment that encompassed programming a C# application to search
>   through and extract sensordata from Microsoft Access databases.

Frontend and backend developer at TransIP

September 2011 - February 2012 (6 months)

>Internship involving developing the frontend and backend of a time-registration application for employees and an application for customer ticket handling.

All-round programmer at F'lexinet

September 2009 - June 2010 (10 months)

>Programming a web-based application in PHP, HTML and Javascript, as well as various other smaller programming tasks.

Subset of personal projects
Smaller projects are left out for conciseness

HoloKilo (2016)
HoloKilo is a positional tracker for Android that relies on the camera, flash and a piece of retroreflective tape instead of a traditional black and white QR-code. It offers a better range and faster and more stable tracking than traditional tracking, while running using less resources. It doesn't rely on any other computervision-libraries. It can be used for keep track of the phone position with augmented or virtual reality as demonstrated in the video.
>(GitHub: github.com/Kjos/HoloKilo)
>(youtube: www.youtube.com/watch?v=EGo1DYRHhnM)

Applied:
>Java, Android, OpenGL, GLES shaders, computer-vision

VoxelPaint (2015)
VoxelPaint is a voxelbased, 3D painting utility. VoxelPaint uses a custom designed voxelrendering engine using raycasting on the GPU, which leans on the LibGDX framework. As far as I know, it is the voxelrenderer with the highest voxeldensity on the Android marketplace and on the internet as a (WebGL) web-app.
>(play with WebGL: www.voxelpaint.com)
>(playstore: play.google.com/store/apps/details?id=net.kajos.voxelpaint.android)
>(youtube: www.youtube.com/watch?v=04VcNS4ErMo)

Applied:
>Java, LibGDX, Android, WebGL, Javascript, GWT, MySQL, PHP

Plantwidth measurement (2015)
For smart agricultural growing, as device was needed to measure the width of plants to calculate speed of growth. I invented such a device using an Arduino Nano, 768 pixels Linear CCD sensor and 3 LEDs. By synchronously powering the LEDs and measuring the shadowfall cast by the plant, the width of the plant was calculated by means of triangulation. The resulting width was output on a 4 digit display in 1/100th of a millimeter.

Applied:
>C, Arduino, electronics, computer-vision

Kalpha.com (2008)
Kalpha.com is a website where people can make notes and sketches on top of existing websites. The results can then be saved and shared with other people.

(visit: www.kajos.net/kalpha)

Applied:
       Javascript, PHP, HTML, MySQL

Craftfield (2010)
Craftfield is a very low impact voxel renderer using infinite static cubemapping for Android. It is
made using the LibGDX platform. The player controls a ball that can adjustments to the of cubes
consisting landscape.
       (playstore: play.google.com/store/apps/details?id=com.toet.CanvasLand&hl=en)
       (youtube: www.youtube.com/watch?v=w_PAFpa4GAg)

Applied:
       Java, LibGDX, OpenGL, GLES shaders, voxelrendering, cubemapping, Android

Unity Destruction Engine (2014)
This is a voxel engine created on top of Unity. It makes use of GPU accelerated raycasting. This
invented technique I've dubbed 'Projected Raycasting'. Conventional geometry is used on which
raycasted voxels are projected when a part of the object is destroyed. Work on the plugin is
discontinued, due to Unity updates breaking support because of a lack of backwardscompatibility.
       (visit: http://www.assetstore.unity3d.com/en/#!/content/12088)
       (youtube: www.youtube.com/watch?v=XrK7RNZd11I)

Applied:
       Unity, shaders (GLSL/HLSL), C#, voxelrendering, (projected) raycasting

Flatland (2012)
Flatland is a voxelengine. The technique I've used here I've dubbed 'Precomputed voxelrendering'.
A (voxel)object is 'photographed' from different angles and at runtime a (spherical) billboard is
showed with the image belonging to the current angle and distance. This project was made with Qt
and OpenGL.
       (youtube: www.youtube.com/watch?v=S7M9oLeWysc)

Applied:
       Qt, C++, OpenGL, voxelrendering, texture rendering and compressing, billboards

DeltaRayTracing (2014)
A prototype for frame coherence with raytracing. New rendered frames use the previous frames to
lower computation of the raytracing.
       (youtube: www.youtube.com/watch?v=yU4wrK-spTU)

Applied:
       Java, shaders (GLSL), LibGDX, raytracing, frame coherence

Heightmap raycaster in Unity (2014)
Low impact heightmap raycaster using innovative, baked, acceleration structures.
       (youtube: www.youtube.com/watch?v=p0Q8HzDfmmk)

Applied:
       Unity, shaders (GLSL/HLSL), raycasting, C#

Nintendo Wii MJPEG Streamer (2011)
MJPEG is a format in which multiple JPEG images form a video. This project created a stream of
screenshots of the desktop and sent them over the network to the Nintendo Wii, using MJPEG

compression. MJPEG was used due to its ability to deliver low latency times.

Applied:
      C, MJPEG compression, TCP

HTML5 Panorama viewer (2013)
This project was set up to view an environment similar to Google Streetview and overlay data on top of the view. The engine works in various browsers, as well as several mobile browsers. Underlying engine is Three.js.

Applied:
      Javascript, Three.js, HTML, PHP

VRPaint (2013)
VRPaint is a stereographic panorama painting tool. It's the first tool on the market to support the creation of stereographic panoramic images. The tool relies on a smart strategy to support GPU acceleration to create the panoramas.

Applied:
      OpenGL, Java, shaders (GLSL), texture blitting, cubemapping

ooJSONSql (2015)
ooJSONSql is a small but effective PHP script to support Ajax calls, which include a SQL query set up with JSON, in a object oriented like fashion. This project is opensource.

Applied:
      JSON, Javascript, PHP, MySQL

Battleship Simulator (2012)
Programmed in JMonkeyEngine as an assignment for INHolland. This project was a team effort. In this RTS style simulation game the player controls one of the boats and has to take out opponents.

Applied:
      Java, JMonkeyEngine

Courses
- Independent Coursework
- Hacking At Random
- Summerschool: MultiMoore
- Defcon

Skills & Expertise
Roughly organized as left-top more experience, right-bottom less experience

Java	Swing
OpenGL	JmonkeyEngine
Android	Qt
LibGDX	GWT
Arduino/Atmega	AutoIT
C++ / C	ActionScript
HTML / PHP / Javascript / jQuery / CSS	OpenCL
SQL	MediaWiki
C#	
Unity3D	

Languages

English
(Full professional proficiency, TOEFL certified)

Dutch
 (Native or bilingual proficiency)