

Ján Cíger

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Professional Profile

- Experienced software developer with comprehensive skills in the current technologies, computer graphics, virtual reality, artificial intelligence.
- Engineer accustomed to dealing with customers and end-users, helping with analysis of their needs and the design and implementation of the solution.
- Researcher and university teacher with publication record and experience with EU funded research projects.
- All-around problem solver, eager to discover new challenges and learn new skills.

Areas of Expertise

Technical skills

- Programming – C, C++, C#, Java, Javascript, Python, shell scripting, embedded C and assembly language
- Computer graphics and AR/VR – OpenGL, OpenSceneGraph, OSVR, Unreal Engine 4, Unity, large screen displays, head mounted displays, tracking, computer vision – OpenCV, tracking, markers, augmented reality, physical simulation and AI
- Various technologies – source code management and revision control (Git, Subversion), distributed computing, networking (TCP/IP, VRPN, 0MQ), CORBA, database programming and design (SQL, Oracle, MySQL, MongoDB), user interfaces (Qt, Android, Polymer, React), cross-platform build management (CMake, SCons)
- OS experience – Linux, Microsoft Windows, Android, some commercial Unix (Solaris, SCO Unix, IRIX).

Academic skills

- Undergraduate & graduate teaching, project supervision, problem-based learning (Aalborg model), peer-assessment teaching of technical subjects
- Research project experience and teamwork in international projects, coordinated EU FP7 project proposal
- Publication record, research in human-computer interaction, virtual reality and artificial intelligence

Miscellaneous

- driving license, amateur radio operator's certificate, electronics, embedded software
- English (written & spoken), German (written & spoken), Russian (basics), French (written & spoken), Slovak (written & spoken, first language), Czech (written & spoken)

Education

– PhD in computer science, Swiss Federal Institute of Technology (EPFL), Lausanne, September 2005
– Master's Degree in Computer Science (Mgr.), Faculty of Mathematics, Physics and Computer Science, Comenius University Bratislava, Slovak Republic, 1999

Professional Experience

Reviattech SAS, France, 1.3.2010 – present

- Responsable de recherche (principal investigator)
 - Main responsibility is applied research, bringing state of the art research and emerging technologies in computer graphics, virtual reality, human-computer interaction and artificial intelligence into industrial training applications
 - Documenting the results and preparing publications
 - Research & development of 3D training and simulation software using C++, Python OpenGL, OpenSceneGraph, Unreal Engine 4, Unity and other technologies, such as Android, Tango & Hololens.
 - Hardware bring-up and integration into VR simulators, including custom design.
 - Collaboration with the research lab at the Technical University Compiègne
- Key projects
 - Implemented an user activity tracking system providing real-time feedback based on activity modelling, Petri nets and fuzzy logic
 - Android demonstrators – remote UI for an immersive simulator and augmented reality demonstrator, tracking solutions (camera, external tracking), various tools and libraries for Unity on Android
 - Hololens and iOS tooling – fiducial tracking integration for AR applications on these platforms
 - Implemented OpenSceneGraph-based simulator client
 - Responsible for the networking layer used by the Revia simulation system
 - Implemented Unreal Engine 4 modifications and tooling for VR app development
 - Implemented ANT+ wireless interface for fitness equipment (bicycle trainers, pulse-oximetry) for VR use.
 - Implemented interface for biological data acquisition system targeting VR use.
 - Built various tools (both sw and hw) and libraries, such as fiducial marker tracking, gesture training and recognition, face tracking, speech recognition, asset production, interfaces and drivers (VRPN, OSVR) to 3rd-party hardware and software.
 - Integrated industrial controls for VR simulators – PLC software development, electrical interfacing, communication over Modbus, TCP/IP.
 - Custom electronics – simulation props, such as a prop dosimeter or a gas leak detector, shutter glasses synchronization, dataglove prototype development, custom inertial tracker prototype, active optical marker prototyping, haptic feedback driver

Aalborg University Esbjerg, Denmark 1.2.2006 – 31.1.2010

- Assistant professor
 - Virtual reality research, VR and interactive environments for rehabilitation and users with special needs, technical responsibility for the SENSORAMA laboratory, data visualization for other departments (oil & gas, energy, climate research)
 - VR application development for the laboratory on Linux and Windows, minor custom hardware development for new interaction methods – camera tracking, accelerometers, AVR microcontrollers, stereoscopy
 - Teaching undergraduate and graduate courses on artificial intelligence, virtual environments, computer graphics, image processing, semester and master project supervision, obtained formal training in the Aalborg project-oriented problem based learning method
 - Webmaster responsibilities (PHP, Drupal, some Java parsing of PDF documents)

VRlab (Virtual Reality laboratory), EPFL, Switzerland 1.8.2001 – 31.8.2005

- Research assistant, system administrator
 - Virtual reality research, developed a system for human-agent and agent-agent collaboration in virtual environments using delegation and team planning (my PhD topic) based on the Open Agent Architecture and extended STRIPS-like planning based on first order logic
 - Developed applications in C++, Python and LISP for both Linux and Windows, integrated action planner/constraint solver with virtual reality applications using CORBA, introduced both cross-platform portability (Windows/Linux/IRIX) in the in-house application framework, helped to introduce and deploy a version control system (CVS), developed a new OpenGL renderer based on OpenSceneGraph to replace the Performer/Cosmo-based renderer in the in-house framework
 - Participation in the EU IST project CROSSES and EU Network of Excellence ENACTIVE – responsible for the development of path planning and collision avoidance algorithms for virtual characters using C++ in an emergency response training system for the Royal Scotland Police in Grangemouth, UK
 - System administration responsibilities – SGI IRIX and Linux deployment for e-mail and web. High performance computing on SGI Onyx2 and Linux cluster, acting as an administrator and support for the users.

WOC s.r.o, 1.6.1999 – 1.8.2001

- Software engineer, system administrator
 - Development of a product data management system for garment industry, mainly for HP-UX, in C/C++, Perl and PL SQL for Oracle, using Motif as the graphical interface, later responsible for the Oracle back-end design and development. Introduced and deployed version control and bug tracking system at the company (Bugzilla).
 - Responsibilities for client-specific product customization, involving problem analysis, solution design and on-site deployment, frequently involving integration with existing legacy products and ERP systems
 - Tier-2 technical support for clients
 - System administration of HP-UX development systems and Linux web and mail servers

BMS Group s.r.o, 1998 – 1.6.1999

- Software engineer
 - Development of a Internet/telephone banking solution for Slovenská Sporiteľňa. Responsible for the implementation of the database communication back end between the banking servers and the Internet/telephone banking system, developed in C++ and PL SQL (Oracle).

UCS s.r.o, 1996 – 1998

- Software engineer (part time)
 - Development of the corporate accounting system for Naftoprojekt Poprad (a large civil engineering company in Slovak Republic). Responsible for development of the thick client application using Oracle Developer/Forms, later worked as a junior analyst integrating case/4/0-based case system with the in-house code generators for the database back-end.

Extracurricular Activities

- Participation in several open source projects
 - OpenSceneGraph – co-author of a VRML loading plugin and Cal3D character animation library integration, collaboration on the Oculus Rift integration, contributing bug fixes to various components, initial port of the Delta3D OSG based engine to Linux
 - Soya3D – adapted the game engine to use newer version of the Cal3D character animation library
 - Mandriva (now Mageia) Linux – contributing bug reports, testing, packaged some software for Mandriva
 - VRPN – contributed several device drivers and fixes – 3D Connexion Space Navigator device (the driver is now integrated in the SecondLife virtual world client), PNI SpacePoint Fusion 3DOF sensor, Gametrak 3DOF position sensor, improvements to the Razer Hydra tracking driver, general bugfixing/code refactoring.
 - Contributions to the OSVR project – mainly general bugfixes and support for the Linux operating system, contributed the Linux support for the Unreal Engine
 - Contributed to the support for the Minoru3D stereo webcam in the Linux kernel
 - Contributor to the Wiiuse open source library for the Nintendo Wiimote controller
 - Published popular mods for the Gametrak and Razer Hydra controllers
 - Published a popular firmware and circuit design for the AD9850 DDS synthesizer for amateur radio use.
- Member of the VRGeeks (<http://www.vrgeeks.org/>) and EPFL Alumni associations
- Electronics and amateur radio – licensed amateur radio operator, interested in analog and digital electronics, including embedded development for the Microchip PIC platforms, Atmel AVR, several ARM Cortex M0/3/4 platforms (STM32, NXP LPC17xx). Basic FPGA/CPLD experience (VHDL).
- Other interests – sound recording/mixing (radio sound engineer experience), photography