Hardware/Software Co-Design Engineer

Seeing Machines is a multi-award winning technology company based in Canberra, Australia and exporting its products and expertise across the globe. We save lives by building machines that see. We do this by enhancing operator performance and safety through real-time monitoring and intervention - enabled by intelligent sensing technologies. In particular, the company specializes in computer vision algorithms that are able to track faces with high fidelity in real-world environments (outside the office).

Due to our success and increased demand from our customers all over the globe, business growth has created the need for a hardware/software co-design engineer to join our Sensing & Embedding team.

Working within the Sensing and Embedding team, this role builds the underlying hardware infrastructure to support the company's next generation of products. The position involves in-depth hardware/software co-design of video and other sensor based algorithms focusing on FPGA based SoC's from both Xilinx (ZYNQ) and Altera.

This role also involves working with research specialists to understand complex algorithms (mainly, but not exclusively, in the video domain) to map specific algorithms to the most efficient hardware and software partitioning, with one foot on either side of the HW/SW divide to get the most of the underlying hardware.

Primary duties and responsibilities include:

- Analyzing, understanding, and ultimately re-architecting complex video algorithms to meet size/performance targets;
- Developing, validating and verifying standalone FPGA IP cores and accelerators;
- Working with the Principal Architect and other members of the Sensing and Embedding team to continuously develop and realize next generation hardware technologies;
- Working with and supporting various software groups within the company to ensure that the best possible use of hardware resources for any given embedded problem is realized;
- Close interface with productisation teams to move core technologies into various end markets; and
- Keeping abreast of developments in the FPGA SoC and IP space to ensure SM is benefiting from latest technologies.

In particular, we are looking for someone with:

- BSEE Degree;
- 5+ years high speed design experience with latest FPGAs;
• Strong video processing experience with proven proficiency on video data handling and processing algorithms and techniques;
• Strong VHDL programming skills;
• Experience with High Level Synthesis tools such as C-to-Gates;
• Strong programming experience (C/C++) – Linux experience would be highly regarded;
• Experience with FPGA embedded processor design (e.g. ZYNQ, Altera SoCs, MicroBlaze, NIOS);
• Experience using high speed transceivers, internal FPGA memory, DSP, and DDR2/3 interfaces (PCIe highly desired);
• Demonstrated understanding of FPGA optimization techniques for both speed and size;
• Demonstrated ability to debug complex FPGAs systems at PCB level with both internal and external logic analysers (High Speed board-level design experience would be highly regarded); and
• A strong discipline in FPGA IP encapsulation, productisation and reuse.

In addition to these specific requirements, you will also have:

• A natural feel, without bias, for how a particular problem maps to both the hardware and software domains of a given hardware architecture and then have the skills and ability to realize that partitioning in an efficient and timely manner;
• Excellent written and verbal communication skills;
• Strong attention to detail; and
• Excellent documentation skills.

While strong technical skills and experience are a must, the position also requires someone with an ability to work effectively in a team and respond cooperatively to the requirements of other company members. Applicants must therefore demonstrate an ability to express technical concepts clearly and calmly, and be of a nature that promotes team cohesion.

This role will be primarily based in Canberra, Australia, and you must be able to live and work in Australia to be eligible for appointment.

If this sounds of interest to you, please send your application and resume to recruit@seeingmachines.com quoting the reference SM-ENG008.