Biosketch: DV Klopfenstein

Professional Preparation

Rensselaer Polytechnic Institute, BSEE
Drexel University, Ph.D. Biomedical Engineering, in progress

Appointments

Drexel University – Philadelphia, PA
Doctoral Candidate, Biomedical Engineering, concentration in bioinformatics, 2011 to present
- Won 1st Place Poster in the Kimmel Cancer Consortium Symposium.
- In the course of research work, made a 3,500% speed improvement of the gene ontology file parser in GOATOOLS, an open-source project used to analyze gene ontology.
- Invited and accepted to be a Collaborator to GOATOOLS. Collaborators have full permissions to write their changes back to project source, in contrast to contributor, who must request that their changes be accepted.
- Accepted and presented in Rome, Italy at BIOTECHNO 2015

L-3 Communications – Camden, NJ
Senior Member of Engineering Staff, 2009 to 2013
- Architected and implemented a data plane verification environment with an elegant user-interface which allowed the architect and RTL (Register-Transfer Level) designer to find over 100 RTL design bugs during a period lasting 8 months leading to first-pass success in the larger ASIC (Application Specific Integrated Circuit).
- Created reusable verification components including drivers, monitors, and the end-to-end scoreboard and predictor. Diverse environments for components include: low-level module testing in a VHDL environment; mid-level sub-system testing in a SystemC environment; and high-level system testing in a Python/C++ environment.
- Created verification infrastructure and wrote tests to find over 40 design flaws on the control plane design during a period spanning only 5 months, including bugs manifesting in hardware error registers, which can be challenging to find.
- Security Clearance: Secret

SGI – Tinton Falls, NJ
Senior ASIC Engineer, 2001 to 2009
- Architected and implemented proprietary ccNUMA (Cache Coherent Non-Uniform Memory Access) models and their supporting infrastructure. The models were used in a standalone mode to verify SGI's ccNUMA protocol architecture connecting thousands of Intel processors used in the SGI super-computers. The models were also used in an interactive mode in ASIC RTL test-benches to verify ASIC logic design.
- Conceived, designed and wrote the message sequence chart generator used at SGI to visualize and communicate specific details in complex scenarios in a clear and simple way when investigating newly discovered design issues. Published and presented results in DesignCon conference.
- Designed an easy-to-use stimulus entry method that enabled both ccNUMA Senior Architects, who are experts in ccNUMA protocol, and engineers who are ccNUMA beginners to easily and quickly create complicated system scenarios.
- Developed and maintained a web site containing current regression results and simulation details, including logic flow diagrams, for each diagnostic allowing colleagues and management to see current regression coverage results and understand how those results were achieved. Debugged errors in random diagnostics and developed fast directed diagnostics which recreated the error found in the time-intensive random diagnostic.

GOLDEN BRIDGE TECHNOLOGY - West Long Branch, NJ
ASIC Engineer, 2000 to 2001
- Reduced simulation time of Golden Bridge Technology's main simulation from 4 hours to 1 hour by creating a behavioral model of the matched filter.
- Verified a PhD's digital filter design using VHDL signals of the type, real, in a VHDL model exposing bugs in the original filter design prior to the actual hardware design and implementation.
- Verified and debugged functional behavior of Encoder/Interleaver/Deinterleaver/Decoder:
    1. Wrote an Interleaver behavioral model used to verify Interleaver RTL design and Deinterleaver and Decoder before Interleaver design was complete.
    2. Wrote VHDL Monitor, which compares Encoder input to Decoder output interactively during simulation. Found and fixed bugs in the Deinterleaver and Decoder.
- Helped ASIC engineers work together on the same project by introducing and supporting version control of project files using CVS (Concurrent Versioning System), a version management tool based on RCS (Revision Control System).
- Designed FEC Interleaver and glue logic between Encoder and Interleaver for wireless communications.

Publications, Presentations and Patent Submissions

- Zhiping Li et. al., Cyclin D1 integrates G9a-mediated histone methylation and nuclear lamina association with lamina-associated domains. Poster presented at Fourth AACR International Conference on Frontiers in Basic Cancer Research (October 23-26, 2015. Philadelphia, Pennsylvania).
- Klopfenstein, D., How to quickly create complicated message sequence charts automatically without spending money on software. Presented slides and published paper at *DesignCon* (Feb. 5 2008)
http://ptaadams.home.comcast.net/~ptaadams/dklopfenstein_designcon08.pdf
http://www.designcon.com/infovault/paper.asp?PAPER_ID=312
- Klopfenstein, D., Submitted material from *DesignCon* paper, How to quickly create complicated message sequence charts automatically without spending money on software., to SGI's Patent Committee for consideration to apply for a patent (June 2, 2008)
- Klopfenstein, D., Creating and Visualizing Complex Behavioral Protocol Scenarios Quickly. Design Verification Conference (*DvCon*) (Invited to present and publish Feb. 23 2007)
- Klopfenstein, D., Huge Fast Behavioral Models in ASIC Verification. *EE Times* (Oct. 31 2005), http://www.eetimes.com/showArticle.jhtml?articleID=172901509
- Klopfenstein, D., Correlating behavioral cycle time with HDL simulation. *EE Times* (Aug. 27 2004), http://www.eetimes.com/showArticle.jhtml?articleID=45400094

Synergistic Activities

- **Science Presenter**, Franklin Institute, 2013-2015. Presented science to children and adults with the goal of inspiring passion for science and technology.
- **Science Presenter**, Our Mother of Sorrows. Created and presented programs including "Amazing Ants" and "Rockets!" to 4th grade to 7th grade students in West Philadelphia who are underrepresented in STEM.
- **Created an algorithm** for sorting and searching GO (Gene Ontology) terms while working as a collaborator on GOATOOLS, an open-source project.
- **Refinement of research tools**: Added new methods for Gene Ontology visualization while being the 2nd largest contributor to GOATOOLS, just after the owner.
- **Tutored a Master's student** while working full time and attending school part-time in the beginning of my graduate work.

Collaborations & Other Affiliations

- **Collaborators and Co-Editors:** Aydin Tozeren[1], Haibao Tang[2], Richard Pestell[3], Mathew Casimiro[3], Zhiping Li[3]
- **Graduate Advisor**: Aydin Tozeren[1]

[1]School of Biomedical Engineering, Science, and Health Systems, Drexel University, Philadelphia, PA, USA.; [2]Human Longevity, Inc.; [3] Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, PA, USA.