My view of the relationship between my faith and my professional work

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> "I believe God made me for a purpose, but he also made me fast. And when I run I feel His pleasure."

In the movie *Chariots of Fire*, the character representing Olympic runner Eric Liddel misses a prayer meeting while pursuing his running career and is rebuked by his sister for not attending a church service. When challenged, Liddel responds with the above quote and in the process reflects a view that worship and kingdom-building are not just done in the context of church but can also be done in the mundane. This is my basic belief as well: that the work of teaching computer science, building computational systems and studying their use, can be a pursuit that is fundamentally honoring to God.

It is difficult to explain to people who are not familiar with building computational systems the extent of beauty and aesthetics that can be present in well-written software. There is an abstract elegance in the algorithmic foundation of software, and there is also a technical beauty in the grounding of an algorithm in code that is designed to be run in the real world. Both of these aspects of computational thinking reflect the work of people who are using their God-given skills to produce an artifact. Like Liddel, those people who are gifted and/or trained to do this well can honor God by doing this with excellence and can feel His pleasure in the process. At the same time they are acting as image-bearers of God by creating something that has never existed before.

As recently as a few years ago honoring God in computational thinking was a niche concern; doing so was relegated to a small group of masters of an arcane art. Today, however, we see that computation is embedded in every aspect of our lives. Not only is the elegance of software critical but now the choice of what to create and how also desperately needs to be informed by the work of Christ in the lives of practitioners.

For example, consider a scenario of self-driving cars of the future. Imagine how such a car will respond to a blown tire while hurtling down a highway that has tolerances much smaller than what a human can biologically manage. In a flash it will calculate the trajectory of the car, and consider how to respond in the face of oncoming traffic. Should the vehicle execute a maneuver across the oncoming lane, which while saving its sole passenger, will likely kill many more passengers in the oncoming car, or should it turn onto the shoulder and hit a barrier which will certainly kill the owner? Perhaps less dramatically, consider how the database should be structured that captures the identity of the car's operator? What should be included and how? Wealth? Relationships? Gender? Social influence? The values that are enacted through code are just as influential as those that are created by law, economic markets and social norms [1]. It is my position that society will be better served by systems such as these that are built by individuals who see the work of computational thinking and systems building as an act of worship.

Being a professor is a unique job. I have been called to do it. It is a unique and weighty responsibility to participate in the education of young adults and particularly in the context of the relationship between professors and students.

Seeing my work as a calling has caused me to do my work differently. I have pursued projects and research agendas that attempt to address problems faced by underserved populations, and/or that have longer horizons than more commercially viable pursuits. Professors have a special opportunity as we are free from many of the short-term motivations that, by necessity, drive corporate research and development. Short-term rewards often incentivize companies to serve immediate mainstream and sometimes trivial interests. Viewing my work as a calling has also given me a passion for teaching which has resulted in several awards from multiple institutions and having been ranked the top instructor among the 21 faculty in the UCI Informatics department.

I have had significant involvement in pedagogical innovation in the courses that I teach. I tend to use cutting edge open-source software such as Hadoop, Unity, Android and social media APIs in my classwork. I have taken my classes on field trips of Google, had guest speakers from Blizzard and have received donations from Amazon and Nokia for course projects.

In my research, I am drawn to those places where Machine Learning, User Interfaces and Ubiquitous Computing intersect and generally do my work in the context of building and subsequently studying systems.

Examples of research projects that I have done that have included undergraduate researchers include:

- Evaluating the role of technology in caring for children whose parents had died of AIDS in sub-Saharan Africa
- Developing sensor systems to detect signs of Cerebral Palsy in children in the NICU.
- Developing intelligent user interfaces that assist elderly exhibiting signs of mild cognitive impairment

Dr. Crawford Long, the person who invented anesthesia, is memorialized in a statue in the U.S. Capitol. On the base of the statue is the quote, "My profession to me is a ministry from God." [2] This simple statement belies a complicated biography of someone, who despite notable faults, managed to glorify God through his profession. Likewise, my professional work is an expression of the skills that God has given me to understand, teach, create and build computational systems. In doing these activities I am reflecting my role both as an image-bearer of God, but also as a worshipper of Him. When I do these things well, as is my ambition, I believe that God is pleased and I bring him glory.