

MIT Media Labs

Intent & Issues

Kenzo Tange once said that there is a powerful need for symbolism and which means that architecture must have something that appeals to the human heart. He was skilled in using traditional symbols to connect his modernist style to the public. Through his deft touch, the unforgiving concrete columns appear organic like wooden beams of old temples. Technology without certain utility or human value risk of becoming obsolete. Much like the modernist works of Kenzo Tange, there requires a human element for technology to achieve ubiquity and relevance. The Media Lab explores new ways to bridge technology to humanity. It is through the human symbols used to express this technology that effectively make the technology accessible and relevant -- the underlying theme that excites me.

I am a wireless engineering professional, computer engineer, artist, and humanist. There are two passions in my life and that is of art and engineering where art is a means for expression, to communicate, and engineering provides the means for transmission. Our need to communicate is essential and I have devoted my effort to large scale wireless infrastructure development where I am directly involved in the engineering design and construction of such wireless bridges to facilitate communication. However, I question the day when these bridges are completely built and when we have reached a point of saturation where there is no longer a technical constraint to the medium for communication.

I believe that this will be the case given recent trends. Digital distribution and wireless applications have put pressure on network improvement. Discussion on spectrum consolidation and investments on infrastructure have raised further interest in the network. It is certain that communication technology will be at the forefront of development. Coupled with our human desire to save time and our thirst for speed,

near limitless bandwidth almost seems like inevitability. What will the applications look like when we reach this point?

I foresee the network behaving like a global nervous system. There are widespread sensors acting like inputs that span across cities while the output mechanisms improve our effectiveness as a community, from optimizing traffic lights in real-time to rapidly monitoring the spread of diseases. We will also benefit from more vivid long distance communication possibly harnessing physical media to establish a greater sense of connection. The world can be viewed as it happens, in real-time, in extreme detail.

We can explore this state of near limitless bandwidth from the bottom up, experiment with different ideas and see how they fit together when the overall picture is unknown. We can combine our understanding from the social communities and context based applications studied in the Viral Communication, Human Dynamics, and Speech + Mobility group as some ways to exploit this state. We can also study how to convey a greater sense of connection through electronic self expression of High-Low Tech or find creative solutions to exploit this limitless capacity in the Smart City. The Media Lab has the resources and the unique philosophy to support this exploration while being relevant. And since I believe the bridges for communication will one day be less of a technical constraint, where the medium itself no longer limits our ideas, I am interested in exploring those ideas -- human applications and new ways to exploit the medium.

The knowledge gained through this program will supplement my current career in wireless infrastructure development while enabling new opportunities to explore the telecommunication industry and be in an environment to realize aspects of this vision. The research groups offer projects that expand upon communication technology and human applications that will be relevant in the future. I am driven by these ideals and want to be at the forefront of development.

About Me

As the son of a mechanical engineer, I too have become a licensed professional engineer. Perhaps it was the constant bombardment of technical information that had seeped into my subconscious. Complaints. Things like how the TV remote can be better organized. However, this path has never been a straight edge. I played the violin growing up and won awards, first and second place, through respective solo and duet Kiwanis festival competitions, so I considered being a violinist. I received a plaque for being the top art student of my entire junior high, so I considered being an artist.

I earned my B.A.Sc. (Honours) in Computer Engineering from the University of Waterloo with an International Studies in Engineering Option. I enjoyed courses in digital integrated circuits, VLSI, artificial intelligence, and software engineering, for their concrete concepts and results-oriented projects but also loved the philosophical and sociological musings of architecture and anthropology. I participated in the engineering exchange program at the National University of Singapore and won a programming competition for a mobile application that we created. I was inspired by architecture while working within the HSBC Main Building of central Hong Kong as a co-op student. In my final year, we completed a project linking credit card transactions to the mobile device which attracted industry attention and had spun off into a separate business. After graduation, my lab partner and I could be found feverishly penning out details of a new social website at the campus coffee house.

Today, I am one of four core wireless engineers at Alcatel-Lucent designing a new cellular network for an unprecedented project in Vancouver just before the Olympic Games. I thrive on thinking of solutions to big problems while being grounded in implementation, from computer aided infrastructure design to visiting the construction site. I have contributed back to my team by researching and creating design guidelines on antenna configuration, for instance, and participated in work groups to analyze a specific problem or trial new hardware. Aside from my career

aspirations, the entrepreneurial spirit still lurks within as I freelance with my web development and graphical skills while experimenting with new web technologies and social ideas. I acquired a prominent decal placement of our company logo onto the carbon fibre body of the University of Calgary FSAE team race car and helped establish the web presence for Eco-Opportunity and True Vision Ghana, two organizations that inspire me. I also build and race remote controlled cars competitively.

Research Interests

Smart Cities offers incredible new techniques to rapid prototyping and forward thinking transportation solutions. The augmented street light is interesting and is a natural extension to wireless infrastructure design. With my practical experience in large infrastructure development, I can shed realistic insight to design and deployment of such projects. I can also contribute to projects that apply the use of wireless infrastructure and mobile applications to bring about the smart city vision.

High-Low Tech has projects that are visual oriented and I have a strong affinity towards new media arts as my strengths are in visual and interactive design. This is demonstrated by my online portfolio. The goals of the group in empowering general users, regardless of computer skill, to offer technology that can be literally grasped and manipulated in creative ways for self expression is a shared ideal. I will be an integral part of the group with my artistic, sociological, programming, and electronic skills.

Viral Communications offer unique insight on empowering end nodes to achieve infinite scaling where, as a whole, bring enhanced capability to the network. This can be seen in my practice of cellular design as it uses infinite scaling, or cell-splitting, as a means of increasing network capacity. I also like the project of Photo Space. A large part of how we express ourselves, our impression onto others, stem from personal appearance. Perhaps the ideas of Photo Space and of social agents established by Ego can be merged to become your personal image assistant, marketing your persona

to professional contacts or personal ones. My experience as a founder of my own social web application and in experiencing such ideas of infinite scaling first hand will aid in research and development.

Speech + Mobility studies new interesting uses of communication technology within some context, location, and presence with speech undertones. The Second-Bike idea is novel and springs to my mind of a "Ghost Rider" concept. Perhaps one can compete with the ghost of themselves when riding their bike in real life similar to the time-trial of a car racing video game. Your track performance is recorded and geotagged. Profiles of other individuals can also be downloaded and competed against. I have a strong desire to explore this new realm of context and location based communication and have many ideas to share.

Human Dynamics' study on Reality Mining to model human behaviour is a practical topic which I find relevant to my field of work. There is future potential in detailed wireless network capacity planning when user patterns can be closely observed. Reality Mining is a manifestation of a geographically widespread sensor. With aid of gps or proximal information and when usage can be classified under some context, the mobile device can be a powerful tool to understand not only human organizational patterns, but also solve engineering problems with different kinds of traffic congestion or capacity constraints. I am interested in exploring creative uses of Reality Mining.