Denes Csala | Research Statement

One of my long-nurtured dreams was to create a Government Algorithm – or even just an advisor, similar to IBM's Watson. I have imagined this algorithm to mine the social preferences of each individual and arrive to the optimal decision to maximize the benefits of its citizens. Whether this would be utopian or dystopian is up for debate, but it would certainly make better decisions than The Donald... This might not be as far in the future as we might think – and we are not prepared. We need to teach the machines, as well as the humans to function in a human-machine mixed environment. We understand the machines – we program them – but we do not quite understand the humans, so neither do they. However, for the first time in history – through big data and machine learning – we have the chance.

Humanity's most complex and alluding problems – like climate change or world peace – are inherently social and cooperative. Up until today, we have explored many angles, from a fully computational to a fully human basis. But we will keep hitting brick walls until we can leverage the human-machine mixed environments (from algorithmic trading to self-driving cars to machine-advised medicine). Before we can integrate bots into our societies, we need to create models that replicate our social mindsets, recreate motivational hierarchies and decision propagation networks from the micro to the macro level – perhaps on a longer term providing key insight on how does information turn into knowledge and later into culture – potentially leading to very basic questions, such as what makes us human and sets us apart from bots.

In this quest, I believe that I bring a unique set of skills to Scalable, spanning over all aspects of data science (mining, analysis and visualization) and complex systems modeling (system dynamics, agent-based, game-theory, network science, social media analysis). This field is very rich, yet largely unharvested and therefore it can lead to high-impact publications, for which I have full dedication. On implementation, I believe we can collaborate with Macro Connections – as I am also in good command of the D3plus data visualization language and immersed in the Media Lab philosophy.

background: Curalytics Network Visualization