Catalyzing Computing Podcast Episode 5 - Code 8.7: Using Computation Science and A.I. to End Modern Slavery

Intro [00:00:10]

Hello. I'm your host, Khari Douglas and welcome to Catalyzing Computing, the official podcast of the Computing Community Consortium. The Computing Community Consortium, or CCC for short is a programmatic committee of the Computing Research Association. The mission of the CCC is to catalyze the computing research community and enable the pursuit of innovative high impact research.

The following interview was recorded at the United Nations University Center for Policy Research in New York City, following the Code 8.7 Conference on using computational research and artificial intelligence to end modern slavery. Held in February 2019, Code 8.7 brought together computer science researchers and technologists with policy researchers, law enforcement officials, and activists involved in the fight against human trafficking. Code 8.7 was named after Target 8.7 of the U.N.'s Sustainable Development Goals. With Target 8.7 193 countries agreed to take immediate and effective measures to end forced labor, modern slavery and human trafficking by 2030 and the worst forms of child labor by 2025. Code 8.7 is a collaboration between the United Nations University's Center for Policy Research, The Alan Turing Institute, Tech Against Trafficking, University of Nottingham Rights Lab, Arizona State University Global Security Initiative, and the CCC. In this episode, I speak with CCC council members and conference participants, Dr. Dan Lopresti and Dr. Nadya Bliss. We're also joined by Dr. James Cockayne, the director of the U.N. University's Center for Policy Research. The

following interview will contain discussion of tools and situations related to human trafficking.

Hello I'm Khari Douglas and you're listening to Catalyzing Computing here with CCC Council members Dan Lopresti, Chair of the Lehigh Department of Computer Science and Engineering, and Nadya Bliss, director of the Global Security Initiative at Arizona State. How are you guys doing?

Dan: Great.

Nadya: Pretty, pretty good, I think.

Khari: So you guys were part of the organizing committee for this conference. Can you say a little bit about your involvement and what happened to put this together?

Dan: Sure. Khari. This came about as a result of a confluence of a number of things coming together, just like a lot of great things. Things come together and you sort of see the connections to start making them and that becomes bigger and bigger as the snowball builds. So I've got some colleagues outside of CCC who are very interested in this problem, some domain experts, and they came to me a year or two ago and started talking about these problems. And we made some connections and as a result made a connection to UN University and found out some of the things they were doing. And then CCC also got involved and has become very active, too. So I'll let Nadya speak as well.

Nadya: I think also in many other fields, we have sort of long term, well-defined research agendas. So if we're thinking about problems like resource scarcity or health or defense, and this is an incredibly challenging issue, and I think this was an

opportunity for the CCC as the computing community to engage in building our research agenda to advance towards some of the solutions here.

Khari: So one of the things people mentioned a lot was whose hands are we putting this technology into and how can we ensure that it's being used properly and not being used to basically propagate increased rates of human trafficking and slavery? Do you have any thoughts about that?

Nadya: So I think, and this was part of the discussion yesterday, explicitly at the event. I think as computer scientists, we love technology and we love innovation and we love just developing new stuff that is super cool and exciting. And we don't really have the culture in our discipline to think about the abuses. And this was incredibly compelling from the very beginning...from a presentation by AnnieCannons, which is an organization that mentors survivors to become software engineers, to talk about, you know, how do you make sure that the technology does not get in the wrong hands?

Because whatever technology may be used to elucidate hidden populations could also make them vulnerable to potential traffickers. So I think there were a number of different directions that we took this. I think there was a lot of discussion about specific tools for maybe law enforcement or NGOs that are on the ground. But there was also a healthy amount of discussion of how to make sure that privacy and confidentiality are sort of front and center and that the technology doesn't get in the wrong hands.

Dan: That's right. So there's nothing that we do as computer scientists that's completely benign. The first thing we need to do is to realize that. Anything that we do that can be used to help address one problem can be cut the other way, either against that problem or in some other fashion that we don't really imagine. That's just the nature of the work that we do. So we have to accept that and understand it. And I think that that awareness is very important.

Hearing directly from the survivors, this is about people, right? So that's another thing that Nadya mentioned. Yeah the technology is really cool and we love doing it, but it really is about the people. That's what the end result is, is helping people, not just the tools we develop. We've got to be careful about the data itself. So there were some very serious discussions. I think there's big, some big challenges. The data's there, the experts want to use it, The social scientists want to use it, the policymakers want to use it, but the fact is, we don't really completely know how to protect it yet. And this is an active research area of our community, which is one of the reasons why we're excited for CCC to be involved.

Khari: So can you guys give us some examples of the tools people demonstrated or even tools that weren't shown here that you think could be used in the space?

Nadya: Sure, I'll highlight one example from IST Research on developing basically graph analytics to detect various patterns, to detect potentially nefarious activity on the dark web. There was also a significant amount of discussion of using satellite imagery. The company name was Planet Labs, I think...Yes it was Planet Labs. So essentially imaging the data that is not...that the resolution is not high enough that it sacrifices someone's privacy, but high enough that you can essentially detect patterns of activity. So those were just some examples.

Dan: Yeah, I think for me it was incredibly impressive to see that you could take satellite imagery that actually is available, just generally available to anyone, and actually extract from that very useful information for certain [aspects] of these problems. Not everything shows up in satellite imagery. But it's an incredibly creative use of surveillance technology that again, can cut both ways, so...

Nadya: I have to say that as someone who kind of works in those securities space, I was sort of amused by the lack of the heebie jeebies around all of that surveillance from

space. So I understand the positives, but I think we have to continuously think about the possible vulnerabilities.

Khari: Right. Yeah. I mean, we don't need to go into an entire digression in this episode, but the fact that you can put a cell phone in space and then view the whole world is a little big brotherish, which could be good or evil.

Nadya: But hey, we're having this conversation, so that's already a positive one, right? It's where we're recognizing that there is a potential for abuse.

Khari: Right. So I believe it was Kevin Bales who talked about using Zooniverse to do analysis of movement, which is sort of a big citizen science tool. I know it's been used to discover some new galaxies and stuff and new species of animals. So, I mean, this workshop is mostly focused around A.I. and those kind of technologies, but how do you see citizen science potentially being involved in stopping human trafficking?

Dan: I think there's a lot of potential here for citizen science and for crowdsourcing. We know that some problems that AI, even you know, the big AI that we're all hoping to aim for, are not going to be able solve a problem or solve the problem right or solve the problem efficiently. At the end of the day, we also said these are problems involving people, so people should certainly be involved in the solutions. There's some really, really cool work I became aware of actually at the AAAI conference about three weeks ago. Abby Stylianou and her colleagues at George Washington have an app that allows you to take a photograph of your hotel room and then you can upload it to a website and that's actually used in identifying photographs that are attempting to advertise victims for trafficking. Oftentimes the traffickers will take these photographs in hotel rooms, and if you can identify the hotel, and as it turns out, people who travel a lot tend to recognize hotels, hotel chains and say oh this looks familiar. Well, there's a reason why it looks familiar. So this is a case where individuals, private individuals crowdsource these

photographs and that can become a tool to help address the human trafficking issue. That's really cool.

Khari: So in that specific usage once, you know, like which hotel it is, how would you I guess you use other information to figure out who the traffickers are or... obviously not just barging into people's rooms. Right?

Dan: Right, right. Exactly. So, you know, there are a lot of different partners that are involved. This is not a single entity that solves this problem. So it involves law enforcement, involves NGOs, involves agencies, national and international agencies as well. So in this particular case, I imagine what you would do is identify the location of where trafficking might be being practiced and then follow up with law enforcement and basically say that you got an indication that something is going on there.

Nadya: I think a lot of these require partnerships with law enforcement agencies. And certainly in the United States, people like Professor Dominique Roe-Sepowitz work very closely with law enforcement agencies.

Khari: So the CCC has recently held a series of workshops around artificial intelligence to build an AI Roadmap. How do you see the discussions from those workshops that you've participated in, Dan, influencing this area? And how do you think the discussions here can influence those discussions?

Dan: Well, I think if you look at what the AI research community is saying and then start aligning that with what we perceive to be the needs coming from all of the great players at Code 8.7, it's really impressive to see the overlap. We're talking about a problem that is both incredibly urgent. I mean literally it is happening right now, and whatever we can do to address it right now is important. But at the same time, some of the challenges are really long term challenges. If we look at the technical issues that need to be addressed to really win this fight against modern slavery, and then if you look at with what the

community says about their research interests, what they regard as a 10 year, 20 year research horizon and some of the really, really tough problems in our AI research. And then you see how they start to map on to the needs of Code 8.7 and the participants in that community. I think there's gonna be a lot of overlap. I think there could be a lot of synergies and a lot of collaborations that come out as a result of this. We've just started to do that, that mapping process.

Khari: Right.

Dan: But I think there's early indications that this is going to be a very fruitful collaboration.

Khari: Looking forward, where do you see this work going for the CCC? I mean, you're both members of the Cybersecurity and Cybercrime Task Force. Are there plans for follow-up workshops? How can people that are interested get more involved in the next steps?

Nadya: Email Dan.

[Laughter]

Nadya: I'm just kidding. They're welcome to get in touch with any of us on the Cybercrime and Cybersecurity Task Force. I absolutely think there's an opportunity to host some research visioning workshops about a number of different areas, ranging from things like explainability of algorithms, to data privacy and security, to multi source data analysis and machine learning and detection of weak signals from big data. So I think I would just say stay tuned for those.

Dan: I'd also like to add a credit to our colleague Keith Marzullo, who is also on the CCC Council and was also a very active participant in the Code 8.7 event as well. He's also on the Cybercrime and Security Task Force too.

Nadya: So everybody should email Keith?

[Laughter]

Dan: Yes, please email Keith. In addition to the things that CCC might do, I think we would also definitely encourage input from the community. Very happy to get the community connected and involved. I think there's going to be a lot of interest in the community from this particular application. It's an incredibly important application. A lot of need for expertise of all kinds. So whether it's in A.I. or whether some of the other fields of computing research, there's a really big opportunity here. So looking forward to it.

Khari: I guess, putting you both on the spot. Future podcast interview topics that you want to pitch right now and get people excited about it?

[Laughter]

Dan Uh-oh

Nadya: I definitely want to talk about certain information, integrity, narrative influence, and just understanding how to know what's real and what's fake out there in all kinds of media.

Dan: And I would say intelligent infrastructure. It's clear we're heading in that direction. Some people are actually experiencing smart cities or some smart city services. It's going to spread across the whole country, across the world, and I don't think we're

ready for it yet. That places a lot of stress on some of the things that we need to worry about as computing researchers as well.

Khari: Yeah. So stay tuned for podcasts in the next few months about both those topics. [Listen to the Catalyzing Computing episodes with Dan Lopresti here]

Okay. So we also have Dr. James Cockayne, the director of the U.N. University's Center for Policy Research. Thanks for having us here, letting us use your space for the podcast.

James: Good day. Great to be with you.

Khari: So what were your overall thoughts on the workshop today and yesterday?

James: I was really impressed by the level of energy and enthusiasm and expertise in the room. I learned a great deal. I hope others did, too. It was a very interdisciplinary discussion. There was a comment at the end that really stuck with me, which was that one of the things you learn from these interdisciplinary discussions is the social scientists don't need to become computational scientists and vice versa. What we need to do is understand each other's languages a bit better and figure out where our interests align.

The other thing that really stuck with me from the discussion was this great idea that we need to figure out how to turn ourselves from being a community of interest to being a community of intent. So what's our intent? What are we trying to achieve through our research? What are our research questions? How do we make the answers to that research actionable? How do we organize around all that? That was just incredibly rich and helpful information that we received from the speakers the last two days.

Khari: Can you expand a little bit on the distinction between a community of interest and a community of intent?

James: Well, it wasn't my idea. So I might be paraphrasing it incorrectly, but as I understood it, it's essentially about having a vector to your conversation, if I can put it that way. That you're thinking about going on a journey together and what is your intended end point of that journey? So it's not just about sharing information and interests and learning from each other that way, It's actually about figuring out your common desired end goal and organizing yourselves and your conversation and your mutual learning with a view of achieving something together. I think the organizing committee for this event came at it from a sense of shared problem solving. I think a community of intent is really about figuring out what those problems you want to solve together are.

Khari: Right. So you're approaching this more from a policy perspective. Obviously, the CCC is looking at this more from a computer science area. But what do you as a policymaker think you need the most from the computing research community?

James: Well, I wouldn't call us, or myself, a policymaker. We think of ourselves as policy researchers. So we're interested in researching policy, how it gets made, but we also have a role in our charter from the General Assembly to bridge that gap between research and policy actors. So we think quite a lot about sort of the demand and supply of research and data and evidence. And what's very interesting in this field is that there are indications of a lot of demand for evidence, but maybe the policy actors aren't quite sure what kind of evidence they need, in what formats, or even frankly necessarily all always what they're questions are. So there's a lot for us to learn from the computational science community broadly understood about how the data we have at the moment can be used to shape policy thinking. What is the evidence that's contained in that data? And how do we organize it and format it and disseminate it in a way that's

useful for policy actors? Equally, there's a lot I think that can be learned from policy actors by the computational and broader research community about what kinds of research are going to be useful, not just from a theory building perspective, but also from an operational law or a policy development perspective.

Khari: So you mentioned the need for data. So what do you think, both from a policy and research perspective, is needed to enable large scale data collection from relevant sources?

James: I think this brings us back to that question about what's our intent. What's our use case here, really? One of the very interesting things that I think came up in the last couple of days was that there is a lot of data out there, but it may not be data that was collected or that is being shared with a view to a particularly clear intent. Or it might be that that intent doesn't necessarily match up to policymakers needs. Or, frankly, to researchers needs, to theory building needs, or simply to evidence development needs. Or it may be that the data is collected, but in ways that make it not comparable or very difficult to share because of the way it's structured or formatted or because of regulatory rules around data sharing and so forth. So there's a fundamental challenge for us, but also a huge wellspring of interest, I think, in thinking of quite a fundamental foundational level about how we develop the systems for data collection and aggregation in ways that will fast track those research inquiries and deliver outputs that are useful to the policy processes.

Khari: So you just mentioned something about the need for consistent data formatting and before you got in, Nadya said something about the need for law enforcement and stuff to be able to work together more seamlessly. I know police departments in the U.S. are very siloed in terms of how they share information. Do you see any ways that the CS community can improve that or is that more of a policy question? And on an international level, is that different than what you see in the US?

Nadya: Well, I guess one thing I'll say is, from a computer science perspective, there's tremendous numbers of low hanging fruit, however, this is a perfect example of technology only solution does not work. So there has to be clear sort of ways and policies to work across different police departments. Often the things that guide them are regional, not just to a particular country, but to a particular city.

James: Yeah, I think we have to remember that we're fundamentally talking about people who have been through deeply traumatic experiences. And when we talk about data, especially from a case management perspective, that's actually a crystallization of someone's trauma quite often. We need to be very, very careful with that data. There are really strong privacy and security concerns. There's questions of them potentially being retraumatized if we collect that data in ways that are insensitive or too onerous, that require and expect too much of them in terms of what they can offer up to those processes.

There are also really good reasons, for example, why different parts of the criminal justice system might compartmentalize data. There may be privacy, security concerns that they have. There may be organizational logics for why they want to keep their data to themselves and use that as a basis for, frankly, internal fundraising or internal political mobilization within an organization. As Nadya says, you know, this is all a human reality. Modern slavery itself is fundamentally about human relationships and how they go wrong. So we have to contextualize that data with human information, intelligence, contextual information. And we have to think carefully about not just what I would call the user experience, but maybe we could have a broader notion of the stakeholder experience because this data is actually taken from somebody.

Khari: So how do you see sort of defining that stakeholder experience, and building off of that, what role do you think business plays in designing or

supporting these tools? Are there ways policymakers can design incentives or regulations that would encourage action in this area?

James: Yeah, the first thing I'd say on that actually is that we have to start with survivors. That as we're thinking about how the policy and research communities work together on this problem and bringing other stakeholders like the tech community, business community, we actually probably need to start with survivors to think about how to build a stakeholder experience that is respectful and that is useful to them, fundamentally. All of us, I think, were really deeply impressed by the engagement of a number of survivors that joined the meeting over the last two days. We were lucky to have four or five who came as Code 8.7 Survivor Leader Scholars, and there were several others from amazing organizations like AnnieCannons, which helped survivors transform themselves into software developers and engineers.

There's a hell of a lot we can learn from them about their engagement with data collection and use experiences. Equally, we do need to bring in tech actors in business because they are frequently the people who know the most about the tools that we're trying to harness. But also they're incredibly good, especially the tech community in the United States at scaling and understanding what incentive structures you need to put in place to scale solutions up to have real impact and that's what we're looking to try to do here.

Khari: I know you have to run, so I have two more questions, kind of for all of you. So what section or sections of the pipeline do you think seem the most promising as far as designing tools to stop trafficking, like in terms of detecting potential sales, detecting money laundering, or like trafficking into or out of orphanages? Are there any specific use cases that you think seem like they could be more successful than others at the moment?

James: It's quite organic, I think, at the moment. It's quite interesting to think about what is driving the fastest momentum. So we saw some really interesting examples around the use of satellite imagery, and, it’s speculative, but one might think that one reason for that is because those businesses are quite heavily invested in market making at the moment. They're trying to explain and explore use cases for this wealth of imagery they have.

On the other hand, there are some areas that are advancing quite rapidly, not so much because of a push, but because of a pull. Thinking, for example, of some of the financial transactions analysis. There's huge demand from the financial sector for improved use of algorithms to understand what evidence and I mean, literally criminal justice evidence, is contained in the financial transactions data that they have. They’re under regulatory pressure actually to do that because of their reporting obligations under anti-money laundering frameworks. So I think it's hard to give a general answer. But what is really interesting is there's a bunch of these things bubbling up. And I think the challenge now is to go away, understand what's driving action in different areas.

Khari: Ok.

Nadya: One other thing that I'll add to this. So this is one of those domains where expertise with the specific problem is really, really important and where computer science can actually help us with the scaling up.

James: Yeah.

Nadya: So a lot of what happens at the moment requires a tremendous amount of manual effort, whether it's manual tracking of an activity or recording some information. And this is one of those things that computer science is excellent at. Computer science is never going to bring that human element, but computer science techniques can really help with the scale. And I think identifying opportunities where systemically some of

those scale up approaches, in a safe and secure way, can really be helpful could be a really good next step.

Khari: Dan, any thoughts?

Dan: Well, I certainly want to echo a lot of what James and Nadya said. But many of these problems look like searching for a very weak signal in amongst a lot of noise. And the kinds of data that needs to be looked at spans the spectrum. So it's not just one kind of data. I think exploring a variety of solutions is going to be important.

Khari: So this is just more logistical, but what strategies would you recommend for listeners who want to hold a workshop similar to this? Both generally in terms of bringing together different communities with lots of stakeholders and specifically if someone wants to do something around human trafficking and cybercrime. What organizations or resources should they look at?

Nadya: I can start with that. I'm going to put James on the spot here, though. So I actually felt that James did a tremendous job driving all of this. So someone has to take ownership, and the thing that I really appreciated about this event is James had ownership of kind of driving the event, but it was incredibly collaborative and all the voices were heard. And that is an incredibly important balance that is so difficult to maintain in this type of multi-disciplinary, multi-stakeholder, multi-domain expertise. So I think those are the two things. So someone has to take ownership and it has to come from a collaborative place.

James: Nadya is very flattering, but since this is a podcast, I can say and you can't you can't prove me wrong that I'm really just a pretty face.

[Laughter]

James: This was incredibly collaborative. I really feel like we lucked out. If there are any Australian listeners, that means the reverse in the United States of what it means in Australia, it means we did really well with our choice of partners. They've been really amazing and CCC has been at the forefront of that and ASU. We really couldn't have found partners that were more willing to engage in a collaborative effort and put the common good in front of their own sectional or private interest. My team, frankly, at U.N.U. and have been amazing. There have been big strides from a research perspective on modern slavery in the last couple of years. The anti-slavery movement, the anti-trafficking movement has shifted culturally from quite a philanthropic charitable motivation and culture towards something more deeply rooted in science. This is the next big step.

We can't do that on our own. We need to connect up to people who understand how to build and use these tools responsibly. We're so excited by what we've already begun to learn from our collaborators. I really hope that U.N. University will be able to keep that collaborative momentum going. But if we tried to do that on our own, frankly, we'd fail. So I think if anyone out there listening is keen to get involved with this, they should. I'm going to turn it back on, Nadya and Dan here. They should be in touch with CCC. They're welcome to come and look at the Delta 8.7 website.

I hope there'll be more information up there soon about what's going to happen with Code 8.7 going forward. We see this as a big tent enterprise, lots of room for different shoulders to be put to the wheel. And with many different actors, I think we'll be able to learn a lot faster and move towards the effective measures needed to end modern slavery more rapidly.

Khari: That sounds great. Do you need to run or…

James: I do need to run right now. Thank you.

Dan: That sounded like the perfect ending.

[Laughter]

Outro [00:29:10]

Khari: Thank you for listening to this episode of Catalyzing Computing. You can learn more about Delta 8.7 and their work to end modern slavery on their website. Video of day one of the Code 8.7 conference is available on their Facebook page. You can find a video from day 2 on the U.N. Web TV Web site. Check out the CCC Cybersecurity and Cybercrime Task Force page on our website for more information about what the CCC is doing to drive research on cyber security and combat cyber crime. Thank you to all the organizations that helped sponsor this very important work. If you've listened to the podcast and you're interested in getting involved with Code 8.7 please do not hesitate to reach out. Until next time. Peace.