



Criminal Investigations  
and Network Analysis  
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Northeastern  
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# Network Interdiction Models to Improve Effectiveness of Coordinated Labor Trafficking Disruption Efforts

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## SUMMARY

This project seeks to improve and better coordinate disruption efforts, focusing on disruption of labor trafficking networks. The research will look at min-max flow network interdiction and a shortest path network interdiction model, where all interdictors have access to the full illicit network across stakeholders, inspectors, and service providers.

## PROBLEM STATEMENT

Many tactics have been proposed to disrupt human trafficking; however, it continues to be a thriving international operation. Currently there are no existing decentralized min-max evasion network interdiction models. This project will assess the impact of coordination among anti-human trafficking stakeholders (such as local/state/federal law enforcement, labor inspectors, and service providers) to cross-coordinate better between illicit markets that put people at risk of harm.

## APPROACH

This project will consider a multi-agent decentralized min-max evasion interdiction model where unique interdictors operate on subgraphs of a common network. The aim is to quantify the impact of coordination among anti-human trafficking interdictors. Anti-trafficking stakeholders typically only have authority to enact interdictions on subgraphs of the network and shortest-path interdiction models do not adequately capture

traffickers' objectives. This research will address those gaps through six major tasks that will quantify the impact of coordination among anti-human trafficking interdictors, and, if it is not practical for all interdictors to coordinate, identify which provide the greatest coordination benefit.

## ANTICIPATED IMPACT FOR DHS

One of the features of combatting labor trafficking that poses both a challenge and an opportunity is that multiple organizations, agencies, and departments are engaged in disruption efforts. DHS, law enforcement, labor inspectors, health care providers, and non-profit organizations are assumed to have the shared goal of ending human trafficking. However, each group is unique in the type of disruption mechanisms they have authority to employ (for example, arrest, labor citation, or victim service provision) and the information they have about the trafficking network. This project seeks to bridge the gap by improving technologies to cut the amount of time and money that goes into thwarting these crimes.

The primary DHS component whose mission this research would serve is Homeland Security Investigations (HSI) with a goal to, "Investigate, disrupt, and dismantle transnational criminal organizations and other criminal entities that pose a threat to national security and public safety because they are involved in: a) human smuggling and/or trafficking; b) exploitation and trafficking of children and other vulnerable populations." CINA will socialize this project with DHS HSI by presenting the research and results to the DHS Center for Countering Human Trafficking (CCHT).