HOW TO SELECT A RESEARCH TOPIC BY XIALI HEI

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HOW WE SELECT OUR RESEARCH TOPICS FOR TOP-4 SECURITY CONFERENCES

Impact: When we start to choose a new security topic, there are several crucial factors. The potential impact is the most crucial factor we consider. I encourage my students to think big and aim big. We first prefer the research could 1) affect the widely applied products; 2) change people's stereotype; 3) open a door or a subarea.

Feasibility: Since I asked my student to think big, that means the feasibility might be low. In this case, we will split the big project into small tasks and finish one or two small tasks first. New problems and ideas will come up when solving small tasks and inspire us to move forward.

Novelty: Novelty level always matters. I will ask my students to check the related work thoroughly and list the potential contributions. If the contributions are strong, we will go further. Otherwise, we will dig deeper to find some general results.

Repeat other works: Sometimes we find some papers are very interesting, I will ask my students to repeat their work. During the repeated experiments, we might discover essential results. However, such work likely to be incremental work; thus, we will rethink the potential contributions again to decide whether we will continue. Repeating other works are time-consuming, even though, I still ask the the graduate students in first two years to repeat other work.

Breadth and depth: Breadth and depth are also important. If a topic is too narrow, we will give up as well. Similarly, if a project could be easily finished and we don't have space to go deeper, we will leave it away as well. If a topic could be systematic work and lead to a Ph.D. dissertation, then we will continue because the project could generate 2-3 good papers for top-4 security conferences.