

Maryland Cybersecurity Center Room 3400 A.V. Williams Bldg. College Park, Maryland 20742 USA Tel. 301.405.0794 FAX 301.314.9658

Letter of Recommendation for Daniel Chen

22 November 2014

To Whom It May Concern:

It is my pleasure to give Daniel Chen my strongest recommendation for an internship in your company. I am an Assistant Professor in the ECE Department at the University of Maryland, College Park. I have an appointment in the Maryland Cybersecurity Center (MC2), where I focus on data-driven security research. Daniel has conducted undergraduate research in my group in the Summer and Fall of 2014. He is a student in the Advanced Cybersecurity Experience for Students (ACES) program—a unique UMD program with an intensive curriculum in key technical, policy, behavioral, and social science components of cybersecurity. He has good programming skills and a curiosity that pushes him to tackle challenging problems. Most of all, I was impressed by Daniels ability to learn advanced concepts and to apply them to practical problems.

Unlike most undergraduate researchers at UMD, Daniel had his own research project and was not supervised by a graduate student. He focused on applying unsupervised machine learning techniques to various enterprise logs (e.g. Web server requests and replies, firewall logs, intrusion-detection system alerts), with the aim of automatically identifying unknown attacks. Throughout my interactions with him, I was very impressed by his eagerness and ability to learn new things, ranging from new programming languages (R—a language for statistical analysis) to machine learning techniques (k-means clustering and principal component analysis). I want to emphasize that these are advanced concepts, taught in the senior year at UMD and at other universities. Daniel was able to assimilate them and to implement them in a log-analysis system after his freshman year. More importantly, the quality of his work exceeds the quality I have seen in some of the projects in my graduate security class.

In summary, Daniel has demonstrated problem-solving skills, programming skills and an ability to learn advanced concepts. He is very smart, hard working and always a pleasure to interact with. Based on my knowledge of Daniel's skills and character, I give him my strongest recommendation for an internship in your organization.

Sincerely,

J. Dumichay

Tudor Dumitraş Assistant Professor ECE Department and Mayland Cybersecurity Center University of Maryland, College Park Tel: +1-240-528-8367 Email: <u>tdumitra@umd.edu</u>