Consumer Behaviour: Next Logical Purchase using Deep Neural Network

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Abstract

When a shopper goes shopping in a retail store or surfs on app for purchasing merchandises, he/she generally has merchandise list either in the form of notes or on top of his mind. In general the merchandise list of the regular shoppers happens to be huge and has hidden pattern. The problem on hand uses customer and his/her transaction data over time and attempts to predict the next basket of the customer leveraging his/her past purchased merchandises.This will provide very smooth and delightful shopping experience for the shoppers. It is meant to acheive three major objectives: - Revenue Enablement: A SmartList that predicts what merchandise a customer is likely to purchase during his next visit Relevance: The SmartList prediction is expected to achieve a satisfactory accuracy level so that the customer finds the SmartList relevant User Experience: The size of a SmartList should be manageable so as not to overwhelm the customers with too many merchandises. Build a framework to predict the next basket for each customer.

Introduction

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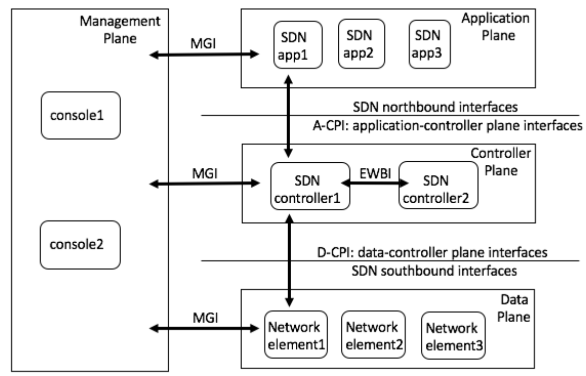

Figure 1: MLP Architecture

Methodology

In this section, we first introduce the architecture and operation of Software-Defined Networking (SDN). Next we give an overview of network reconnaissance, its utility to attackers, and the impact of successful reconnaissance on an enterprise network's security. Finally we discuss how the architecture of SDN enables an adversary to perform reconnaissance in ways that were not feasible in traditional networks. In this section, we first introduce the architecture and operation of Software-Defined Networking (SDN). Next we give an overview of network reconnaissance, its utility to attackers, and the impact of successful reconnaissance on an enterprise network's security. Finally we discuss how the architecture of SDN enables an adversary to perform reconnaissance in ways that were not feasible in traditional networks. In this section, we first introduce the architecture and operation of Software-Defined Networking (SDN). Next we give an overview of network reconnaissance, its utility to attackers, and the impact of successful reconnaissance on an enterprise network's security. Finally we discuss how the architecture of SDN enables an adversary to perform reconnaissance in ways that were not feasible in traditional networks. In this section, we first introduce the architecture and operation of Software-Defined Networking (SDN). Next we

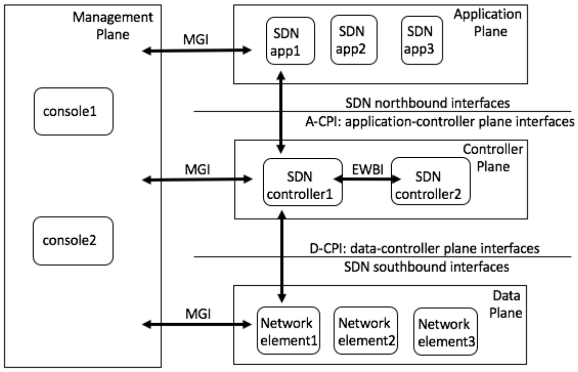

Figure 2: LSTM Architecture

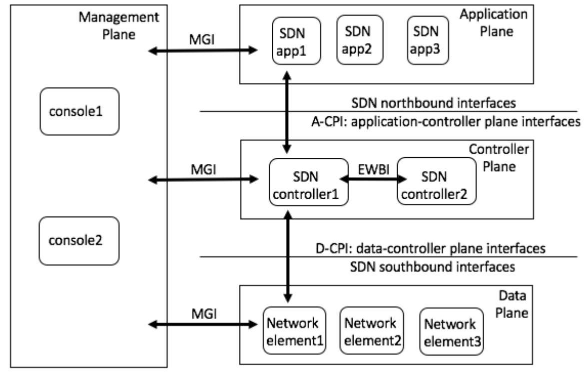

Figure 3: CONV1D Architecture

give an overview of network reconnaissance, its utility to attackers, and the impact of successful reconnaissance on an enterprise network's security. Finally we discuss how the architecture of SDN enables an adversary to perform reconnaissance in ways that were not feasible in traditional networks. The well known Pythagorean theorem $x^2 + y^2 = z^2$ was proved to be invalid for other exponents. Meaning the next equation has no integer solutions:

$$x^n + y^n = z^n$$

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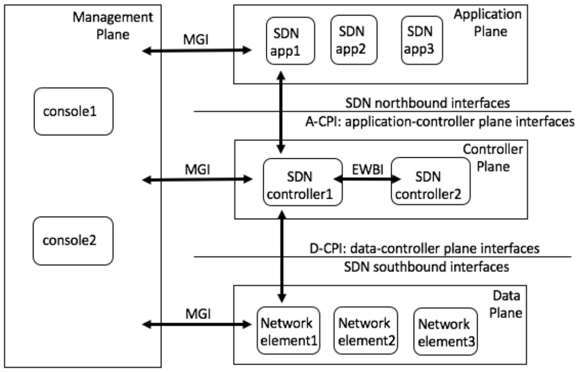

Figure 4: CONV1D-LSTM Architecture

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