Neural Network Generator: Technology-Neutral Design and Technology-Specific Generation

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Although machine learning is becoming increasingly necessary in every industry, its programming is still difficult for most people, even to some experts. Scripting for neural network usually requires challenging research and study. In order to solve this problem, I developed a new technology-neutral design and technology-specific generation tool for various types of neural networks that is usable without prior professional knowledge. This proposed generation software consists of two functional parts. First part is a visual programming editor that designs neural network architecture through graphical block coding. Like ‘Scratch’ or ‘App Inventor’, the user can simply drag and drop different command blocks in order to build a network architecture. This is technology-neutral in a way that it simplifies complex neural network functions into concise command-option patterns. Simultaneously, graphical layout of neural network is drawn aside the blocks of code to aid the user’s comprehension of the code’s structure. Second part comprises generation of technology-specific code for various neural network libraries such as Keras, TensorFlow, and CNTK. The neural network that was designed from the first part is mapped into codes for a specific neural network library chosen by the user. Unique mapping rules for each library were developed and adopted to generate corresponding neural network codes. Through using my neural network generation tool, even inexperienced novices would be able to build their desired neural network scripts within an hour of Hands-on Labs. Experts, moreover, would be able to program neural network scripts within a shorter period of time with less difficulty.

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