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<div align="center">Is Computer Science a Science?</div>

The evolution of information technologies, computers, and the infrastructures that connect everything have pushed the boundaries of the validity of the name of the field. Science is defined as: "the systematic study of the nature and behavior of the material and physical universe, based on observation, experiment, and measurement, and the formulation of laws to describe these facts in general terms." (Collins Dictionary) One of the key points from this definition is them systematic study which in practice is the scientific method which aims for objectivity in the gathering of data. The next key point is the formulation of laws; these laws are only accepted by the scientific community after being repeated, published and peer reviewed. Computer science is not a science despite scientific principals being applied within the field of study as it does not systematically use the scientific method to prove (or disprove) hypothesis explaining the natural world. Computer science is highly subjective, proposing laws are subject to individual opinions when being considered in addition to being very relative to the current state of tools and technologies.

As many aspects of life, the application of the scientific method is used to convey a level of authority on a subject; computer science is no exception. The scientific method consists of posing a question, background research, forming a hypothesis, experimenting, analyzing the data collected, and evaluating the hypothesis considering the results. For a typical example of the application of the scientific method, a computer scientist can pounder the best (based on efficient use of system resources and cross-platform application). In their research discover several options from shared memory, file IO to sockets. They hypothesis that the socket inter-process will be the best. The experiment will be an echo server and the resources used will be captured and logged. Six implementations are devised, one per technology per operating system (Windows 10 and Ubuntu 16.04 exclusively) and are run through the experiment 10 times. Taking the mean of each experiment, the socket inter-process outperformed the other options. This example follows the outline of the scientific method but does not give way to any fundamental law which explains a phenomenon in the natural world. The hypothesis was not a cause and effect, meaning the experiment did not alter the initial state and measure the throughput. This experiment only offers reasons as to why one should choose a socket inter-process channel in this limited context; missing a key component of the definition of science.

Scientific laws such as the conservation of mass or universal gravity are some of the finer examples of the universe works. Computer science in practice takes place through writing code which can be interrupted by a computer for processing. Computer scientist have worked over the decades to create new languages and debate about which ones are the most utilitarian. The answer to which language should be used must be answered in a very specific context, and the decision will most likely not be based on any technical aspect of the languages proposed. For instance, you are deploying a new continuous integration system for your company and after months of research and deliberation have opted for Jenkins. However, this means there must be a selection of which scripting language to use for launching the pipeline. There are operating system specific languages like Bash and Batch, the mainstream option Python, the taboo option PowerShell (according to the great people of the internet), or the existing infrastructure emplace JavaScript. After several more months of deliberation the group

have decided you will use PowerShell and with no explanation you proceed forward with the project. There is no technical reason why this language would be chosen over any of the others, the rational was based on how that group of individuals felt at that moment in time. Had this conversation taken place 5 years prior the options to consider would have been different. Had the conversion taken place 5 years from now the decision might not have included any of the mentioned options. Any given laws in computer science a limited to the technology that currently exists. As technology continues to evolve any governing notion that computer science has set forth is given to change with it.

As computer science is entwinned with the technology it is attached to, it fails to meet the requirements of what constitutes a technology in accordance with the definition set forth because it does not follow a systematic study to provide formal laws described how the universe works. The lack of consensus amongst computer scientists comes from the subjective opinion base which separates the various technologies and methodologies that exist within the field.