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Abstract: Formal logic through existential graphs – RPI Cognitive Science department

Formal logic – often called the invincible science, is a critical tool for the understanding of any formal science. Logic gives us the ability to reason and is the tool to create arguments and deductions. Although being the underlying structure of every core science, formal logic is often underemphasized compared to other subjects. This issue could be due to the highly abstract nature of logic and complex symbolic representation. Also, without much experience of formal logic, it can take many steps to prove even a simple claim using formal logic. Enter Visual Logic, a program to teach logic through existential graphs. Existential graphs are a visual notation for logical expressions developed by Charles Sanders Peirce. This visual notation has fewer symbols and fewer operations compared to classical logic. In fact, existential graphs are restricted to only four operations which leads to creating proofs that often take fewer steps. Proving a claim in Visual Logic is also a far more engaging process by manipulating graphs in 2D space compared to writing down lines of expressions in classical logic. Ultimately this project will show how Visual Logic can be an effective method for teaching and practicing logic while advertising the advantages of existential graphs.