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A Thread of History and Progress in Program Synthesis

— Invited Talk —

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Abstract.
How far have we progressed towards automating the design and understanding of computer software? In particular how goes progress on automating the correct construction of software? Is there evidence of practical improvements in productivity, assurance or performance? Presented here is a very personal viewpoint beginning with with early constructive proofs and precursors of logic programming and then moving through early years of software transformation and refinement. We conclude with discussion of more recent progress in software design knowledge, and the concomitant theory and tools for representing and applying this knowledge, touching on methods of abstract specification, factoring, composition and refinement.

Biography.
Dr. Green is Chairman and CEO of Kestrel Institute, which he founded in 1981. Dr. Green developed the foundation theory for Logic Programming, which also formed the foundation for the Deductive Data Base field, as well as many formal, inference-based AI and planning systems. He has made several contributions to the field of program synthesis, including a paper that provided the basis for the Refine language, and a paper providing the basis for automated synthesis of software visualization.

Dr. Green's research interests center in the area of knowledge-based tools for software engineering. He has worked on systems that help to automate acquisition, analysis, and synthesis of software. His recent interests have been in automated algorithm design, synthesis of visual representations of software, and the role of automated design in software engineering.

Dr. Green received his BA from Rice University in 1963 and his BS from Rice University in 1964. Dr. Green received his MS in 1965, and PhD in 1969, in Electrical Engineering, from Stanford University. He was presented the Grace Murray Hopper Award by the Association for Computing Machinery (ACM) in 1985 for establishing the theoretical basis for the field of logic programming.

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