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Enhancing Programming Productivity for Individuals with ADHD Through Generative Artificial Intelligence: An Inductive Analysis

Lionel Mew
lmew@richmond.edu
University of Richmond
Richmond, VA, USA

Abstract

This inductive analysis examines how generative artificial intelligence (AI) can enhance programming productivity for individuals with attention-deficit/hyperactivity disorder (ADHD) by addressing executive function deficits that impair coding performance. Through systematic analysis of 45 peer-reviewed studies spanning ADHD interventions, programming productivity research, and AI-assisted development, we identify four primary mechanisms by which generative AI tools mitigate ADHD-related programming challenges: (1) cognitive scaffolding through automated pattern recognition and workflow optimization that compensates for executive function deficits, (2) task decomposition that breaks complex algorithms into manageable, discrete components, (3) real-time contextual support that reduces attention-switching costs by eliminating the need for external documentation searches, and (4) personalized learning systems that adapt to individual ADHD presentations and work patterns. Our analysis reveals that AI-assisted programming demonstrates particular efficacy for entry-level and junior programmers with ADHD, with documented productivity increases of up to 55% in code generation tasks. However, implementation requires careful consideration of code quality validation demands, potential skill development dependency, and privacy concerns. We propose a three-phase implementation framework (Assessment-Integration-Optimization) and discuss implications for computer science education and workplace accommodations. This research contributes evidence-based guidance for leveraging generative AI as cognitive support technology hin neurodiversity-inclusive programming environments.

Keywords: ADHD, programming productivity, generative artificial intelligence, executive function, neurodiversity, cognitive support

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