

Generative AI for Chip Design

A Comprehensive Learning Resource Collection

■ Who This Is For

This collection is designed for curious minds from all backgrounds who want to understand how artificial intelligence is revolutionizing computer chip design. Whether you're a high school student exploring STEM fields, an undergraduate student in any major, an educator looking for cutting-edge examples, a professional in another field interested in AI applications, or simply someone curious about how technology works, these materials will guide you through this fascinating intersection of AI and hardware design.

■ What You'll Discover

Explore how Large Language Models (the same technology behind ChatGPT) are being used to automatically design computer chips and hardware. You'll learn about exciting applications like converting software code to hardware designs, generating computer circuits from natural language descriptions, creating tests for chip validation, and much more. No prior experience in computer science or electrical engineering required!

■ Time Investment Guide

Material Type	Time Commitment	Best For
Quick Overview (This Document)	5 minutes	Getting oriented
Interactive Tutorials (Colab Notebooks)	30-90 minutes each	Hands-on learning
Research Papers	20-45 minutes each	Deep understanding
Presentation Slides	15-30 minutes each	Visual learners
Video Presentations	45-60 minutes each	Comprehensive overview
Complete Collection	10-20 hours total	Thorough exploration

■ Featured Research Areas

- AutoChip: Automatic generation of computer hardware designs
- C2HLSC: Converting software code to hardware designs
- Hardware Testing: Automated creation of validation tests
- Security: Using AI to generate security checks for chips

■ Getting Started

Begin with the interactive tutorials in the 'colab-scripts' folder - these are designed to run in your web browser without any software installation. Each tutorial includes step-by-step explanations and real examples. The README.md file provides links to all papers, code repositories, and additional resources. Don't worry if some technical terms are unfamiliar at first - the materials are designed to build your understanding progressively.