UNIVERSITAS
GADJAH MADA
PENGEMBANGAN MODUL EFEK GITAR ELEKTRIK BERBASIS FPGA DENGAN LATENSI RENDAH
Nathan Lutfi Raqhi Ifandi, Nia Gella Augoestien, S.Si., M.Cs.

Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Åberg, B. (2024). *Low-Latency Digital Guitar Effects Using Signal Processing with Python in Real Time* (Master's thesis, Åbo Akademi University). https://urn.fi/URN:NBN:fi-fe2024040414758

Analog Devices. (2010). ADAU1761: SigmaDSP Stereo, Low Power, 96 kHz, 24-Bit Audio Codec with Integrated PLL [Data sheet]. https://www.analog.com/en/products/adau1761.html

Arifin, M., Suksmadana, I. M. B., & Zainuddin, A. (2016). Implementasi real time audio effect pada gitar berbasis Raspberry Pi. *Dielektrika*, Universitas Mataram. https://eprints.unram.ac.id/7054/1/JURNAL%201%20Kolom.pdf

Barbosa, A., & Gouveia, P. (2017). *An FPGA Implementation of Digital Guitar Effects*. https://repositorio-aberto.up.pt/bitstream/10216/106627/2/211643.pdf

Blasie, C. W. (2020). *Design of DSP Guitar Effects with FPGA Implementation* (Master's thesis, Rochester Institute of Technology). https://repository.rit.edu/theses/10361/

Crockett, L. H., Elliot, R. A., Enderwitz, M. A., & Stewart, R. W. (2014). *The Zynq Book: Embedded Processing with the ARM Cortex-A9 on the Xilinx Zynq-7000 All Programmable SoC*. Strathclyde Academic Media. https://www.zynqbook.com/

Digilent. (2021). PYNQ-Z2 reference manual. https://digilent.com/reference/programmable-logic/pynq-z2/reference-manual

Espinosa-Duran, J. M., Liévano-Torres, P. P., Rentería-Mejía, C. P., & Velasco-Medina, J. (2014). Design of a programmable microsystem for digital audio effects using FPGAs. Revista EIA, 11(22), 133–146. https://doi.org/10.14508/reia.2014.11.22.133-146

Foster, R. (2020). *pynq-audio: RTL and Python for using the ADAU1761 audio codec on the Pynq-Z2 board from TUL* [Kode sumber]. GitHub. https://github.com/reed-foster/pynq-audio

GW Instek. (2013). *GDS-2000A series oscilloscope specifications*. Good Will Instrument Co., Ltd. https://www.gwinstek.com/zh-CN/download/downloadFile/656

Haris, B. (2020). *FPGA Guitar Multi-Effects Processor* (6.111 Final Project Report, Massachusetts Institute of Technology). https://web.mit.edu/6.111/www/f2017/projects/harisb_Project_Design_Presentation.pdf

IFC-20. (2020). *Faust2FPGA: From High-Level DSP Specification to FPGA Implementation*. https://faust.grame.fr/doc/pdf/ifc20_faust2fpga.pdf

JCGM. (2008). *Evaluation of measurement data — Guide to the expression of uncertainty in measurement* (JCGM 100:2008). Bureau International des Poids et Mesures.

Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

https://www.bipm.org/documents/20126/2071204/JCGM_100_2008_E.pdf

Michon, R., Bizien, J., Popoff, M., & Risset, T. (2023). *Making frugal spatial audio systems using field-programmable gate arrays*. Proceedings of the 2023 International Conference on New Interfaces for Musical Expression (NIME). https://nime.org/proceedings/2023/nime2023_7.pdf

Moghanloo, S., & Ebrahimi, B. (2022). Implementing real-time low-power audio effect with FPGA. *2022 Iranian International Conference on Microelectronics (IICM)*. https://doi.org/10.1109/IICM57986.2022.10152352

Olivares, J. (2019). Digital flanger effect modeling using delay modulation. *Audio Engineering Society Convention Paper 8127*. http://www.aes.org/e-lib/browse.cfm?elib=15622

Olivares, J., Palomares, J. M., & Gámez, J. C. (2019). *Learning Engineering by Modeling a Guitar Effects Pedal Using FPGA*. https://ccia.ugr.es/vip/files/conferences/mcce_Olivares_1.pdf

Olsson, J., & Berg, H. (2013). *Guitar Pedal FPGA: Real-Time Digital Signal Processing for Guitar Effects* (Bachelor's thesis, Chalmers University of Technology). https://odr.chalmers.se/server/api/core/bitstreams/68997fa9-98e3-4a0f-9e32-998e8c8c44f3/content

Popoff, M. (2024). Compilation of real-time audio DSP on FPGA (Thèse de doctorat, INSA Lyon). https://theses.insa-lyon.fr/publication/2024ISAL0128/these.pdf

Risset, T., Michon, R., Orlarey, Y., Letz, S., Müller, G., & Gbadamosi, A. (2021). Faust2FPGA for ultra-low audio latency: Preliminary work in the SYFALA project. https://hal.science/hal-03116958

Robles, C. J. (2019). *An FPGA Implementation of Digital Guitar Effects* (Senior project, California Polytechnic State University, San Luis Obispo). https://digitalcommons.calpoly.edu/cpesp/316/

Rock, S. P. (2021). *DSP Guitar FX Pedal* (Senior project, California Polytechnic State University). https://digitalcommons.calpoly.edu/eesp/544/

Siahaan, B., & Huda, M. (2010). *Implementasi Real-Time Audio Effects pada Gitar dengan DSP TMS320C6713*. Politeknik Elektronika Negeri Surabaya.

Smith, J. O. (2010). *Physical Audio Signal Processing*. Stanford University. https://ccrma.stanford.edu/~jos/pasp/

Smith, J. O. (2011). Flanging and chorus. In Physical audio signal processing. Stanford University, CCRMA. https://ccrma.stanford.edu/~jos/pasp/Flanging.html

Taylor, J. R. (1997). *An introduction to error analysis: The study of uncertainties in physical measurements* (2nd ed.). University Science Books.

TUL. (2018). *TUL PYNQ-Z2 Reference Manual (v1.0)*. https://www.tulembedded.com/fpga/ProductsPYNQ-Z2.html

Wessel, D., & Wright, M. (2002). Problems and prospects for intimate musical control of computers. *Computer Music Journal, 26*(3), 11–22. https://doi.org/10.1162/014892602320582945

UNIVERSITAS
GADJAH MADA
PENGEMBANGAN MODUL EFEK GITAR ELEKTRIK BERBASIS FPGA DENGAN LATENSI RENDAH
Nathan Lutfi Raqhi Ifandi, Nia Gella Augoestien, S.Si., M.Cs.

Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Xilinx. (2021). *Zynq-7000 SoC technical reference manual (UG585)*. https://docs.amd.com/v/u/en-US/ug585-Zynq-7000-TRM

Xilinx. (2022). *Vitis High-Level Synthesis User Guide (UG1399, v2022.2)*. https://www.xilinx.com/support/documents/sw_manuals/xilinx2022_2/ug1399-vitis-hls.pdf

Zölzer, U. (2011). *DAFX: Digital Audio Effects* (2nd ed.). Wiley. http://ollintec.com/procesamientodevoz/DAFX_-_Digital_Audio_Effects.pdf