

**MODEL KOMPUTASI MEDIA PEMBELAJARAN *COMPUTER-AIDED DESIGN*  
BERBASIS *DEEP LEARNING* PADA MATERI MEMODIFIKASI GAMBAR 3D  
SEDERHANA**

TESIS

*Diajukan untuk memenuhi persyaratan dalam menyelesaikan program magister Pendidikan  
Teknologi dan Kejuruan*



oleh

Nisa Aulia Saputra

NIM 2109576

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MEMODIFIKASI GAMBAR 3D SEDERHANA**

Oleh

Nisa Aulia Saputra

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## HALAMAN PENGESAHAN

**Nisa Aulia Saputra**

MODEL KOMPUTASI MEDIA PEMBELAJARAN *COMPUTER-AIDED DESIGN* BERBASIS *DEEP LEARNING* PADA MATERI MEMODIFIKASI GAMBAR 3D SEDERHANA

disetujui dan disahkan oleh pembimbing:

Pembimbing I,



Prof. Dr. Ida Hamidah, M.Si.

NIP. 19680926 199303 2 002

Pembimbing II,



Dr. Eng. Agus Setiawan, M.Si.

NIP. 19690211 199303 1 001

Pembimbing III,



Prof. Dr. Lala Septem Riza, M.T.

NIP. 19780926 200812 1 001

Mengetahui,

Ketua Prodi Pendidikan Teknologi dan Kejuruan



Prof. Dr. Ade Gafar Abdullah, M.Si.

NIP. 19721113 199903 1 001

## PERNYATAAN

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Bandung, Januari 2023

Nisa Aulia Saputra, S.Pd.

NIM. 2109576

**MODEL KOMPUTASI MEDIA PEMBELAJARAN *COMPUTER-AIDED DESIGN* BERBASIS *DEEP LEARNING* PADA MATERI MEMODIFIKASI GAMBAR 3D SEDERHANA**

Nisa Aulia Saputra, Lala Septem Riza, Agus Setiawan, Ida Hamidah  
Program Studi Teknologi dan Kejuruan, Sekolah Pascasarjana Universitas Pendidikan  
Indonesia

Jl. Dr. Setiabudi No.229 Bandung  
Penulis Korespondensi, email : [nisaputra@upi.edu](mailto:nisaputra@upi.edu)

**ABSTRAK**

Merancang gambar mesin merupakan hal utama yang perlu dikuasai oleh siswa SMK yang mengambil program keahlian perancangan gambar mesin. Perancangan ini dilakukan dengan menggunakan *software* CAD baik 2D maupun 3D. Teknologi ini merupakan hal baru bagi siswa sehingga siswa kesulitan untuk memelajarinya. Tujuan dari penelitian ini adalah membuat model komputasi untuk media pembelajaran berbasis *deep learning* (DL) agar dapat membantu siswa dalam mempelajari CAD 3D. *Deep Learning* dipilih karena sistem ini merupakan sistem cerdas yang mampu membuat klasifikasi dan keputusan terkait data yang kita inputkan. Pada kasus ini DL akan mampu mengklasifikasikan antara gambar yang dibuat dengan menggunakan perintah *extrude* atau perintah *revolve*. Metode penelitian yang digunakan untuk merancang model komputasi ini adalah *Design Based Research* (DBR). Metode DL yang dipilih adalah *Convolutional Neural Network*. Hasilnya adalah model komputasi mampu mengklasifikasikan gambar yang dibuat menggunakan *revolve* ataupun *extrude*. Nilai akurasi model komputasi sebesar 0,8650 (86,5%) dengan *training* menggunakan *epoch* sebanyak 300. Model komputasi berfungsi sebagai sistem yang menyusun pembuatan media ajar untuk mengarahkan siswa dalam meningkatkan kemampuan berfikir analisis dan literasi teknologi.

Kata Kunci: *Design Based Research*, *Deep Learning*, *Convolutional Neural Network*, *Computer-Aided Design*, Media Pembelajaran

**COMPUTING MODEL OF COMPUTER-AIDED DESIGN LEARNING  
MEDIA-BASED DEEP LEARNING OF SIMPLE 3D IMAGE  
MODIFICATION MATERIALS**

Nisa Aulia Saputra, Lala Septem Riza, Agus Setiawan, Ida Hamidah  
Department of Technology and Vocational Education, Post Graduate School UPI  
Jl. Dr. Setiabudi No.229 Bandung  
Corresponding author, email: [nisaputra@upi.edu](mailto:nisaputra@upi.edu)

**ABSTRACT**

*Designing machine drawings is the important thing that needs to be mastered by vocational high school students who take a design engineering program. This design is carried out using CAD software, both 2D and 3D. CAD is the new technology for students, so this makes students have difficulty to learn. This study aims to create a computational model for learning media-based deep learning to help students learn 3D CAD. Deep learning was chosen because this system is an intelligent system which can make predictions related to the input data. In this case, the DL can predict between images created using the extrude command or the revolve command. The research method used to design this computational model is Design-Based Research (DBR) and the DL method chosen is CNN. The result is that computational models can predict images created using revolve or extrude. The accuracy of the computational model is 0.8650 or 86.5%. The training process is carried out by setting 300 epochs. The computational model is a teaching medium for stimulating students to improve their literacy skills.*

*Keywords: Design Based Research, Deep Learning, Convolutional Neural Network, Computer-Aided Design, Learning Media*

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