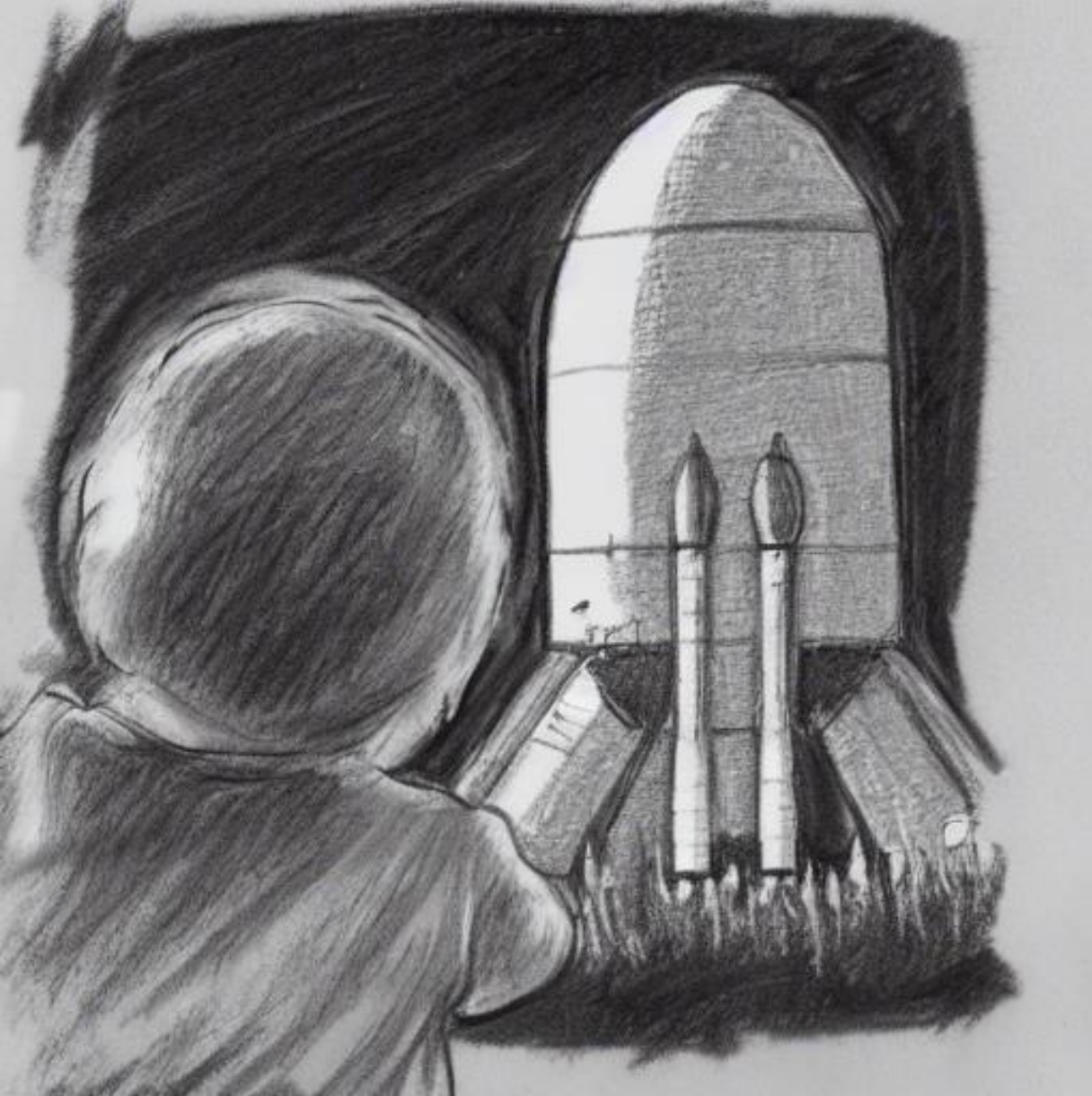# Chapter 0: Prologue

Mathematical Foundations of Deep Neural Networks

Spring 2024

Department of Mathematical Sciences

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Seoul National University

"Sketch of a kid watching NASA rocket launch" by SD
"Oil painting of John F. Kennedy giving a speech" by SD

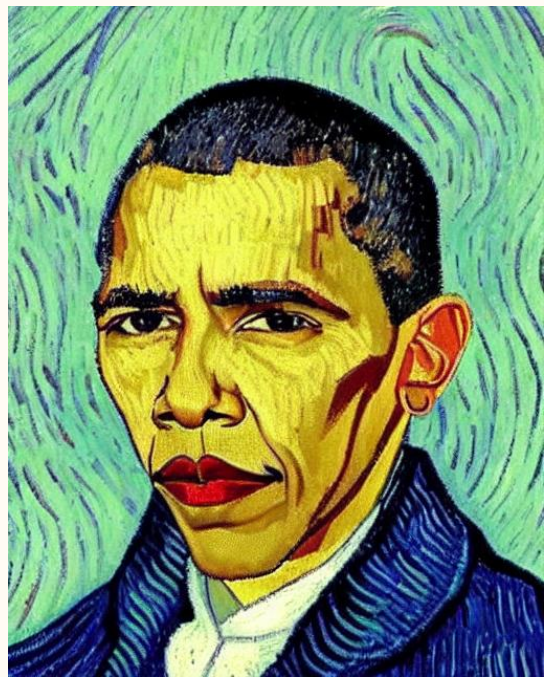"Sketch of people celebrating in NASA Mission Control" by SD

3

Stable diffusion

a photograph of an astronaut riding a horse

Barack Obama Self-portrait without a beard by Vincent van Gogh

impressionist image of different emotions, absract

R. Rombach, A. Blattmann, D. Lorenz, P. Esser, and B. Ommer, High-resolution image synthesis with latent diffusion models, *CVPR*, 2022.

Real photo of engineers in NASA mission control celebrating the Apollo 11 moon landing