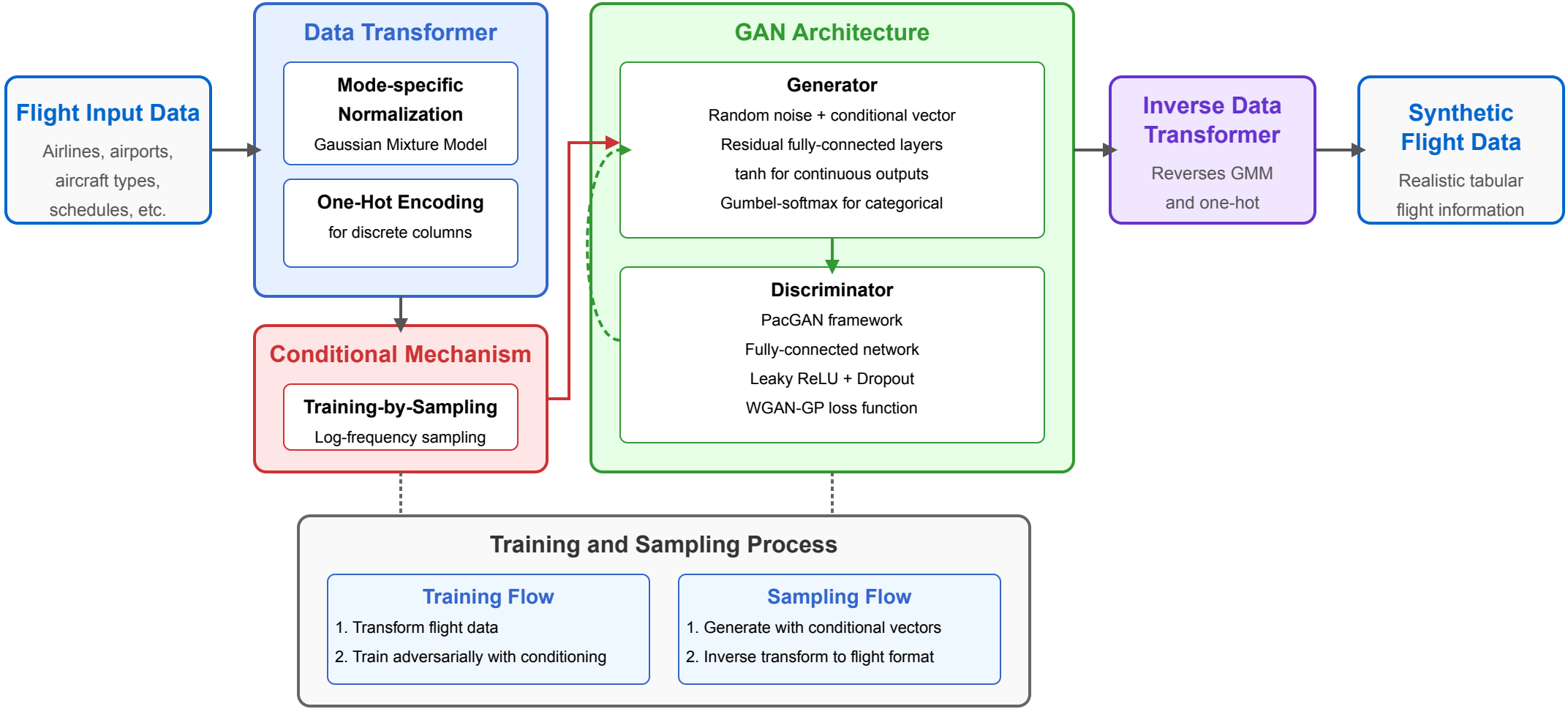
Flight Input Data
Airlines, airports, aircraft types, schedules, etc.
Data Transformer
Mode-specific Normalization
Gaussian Mixture Model
One-Hot Encoding
for discrete columns
Conditional Mechanism
Training-by-Sampling
Log-frequency sampling
GAN Architecture
Generator
Random noise + conditional vector
Residual fully-connected layers
tanh for continuous outputs
Gumbel-softmax for categorical
Discriminator
PacGAN framework
Fully-connected network
Leaky ReLU + Dropout
WGAN-GP loss function
Inverse Data Transformer
Reverses GMM and one-hot
Synthetic Flight Data
Realistic tabular flight information
Training and Sampling Process
Training Flow
1. Transform flight data
2. Train adversarially with conditioning
Sampling Flow
1. Generate with conditional vectors
2. Inverse transform to flight format