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### Lampiran 1 Surat Keterangan Bebas Plagiat



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### Lampiran 3 Source Code

#### Kode Seleksi Fitur

```
# Definisi Fitur yang Akan Digunakan (berdasarkan seleksi)

# 1. Fitur Kategorikal Terpilih (16 Fitur)
selected_categorical_features = [
    'srccountry', 'dstcountry', 'action', 'proto', 'service',
    'level', 'app',
    'policyid', 'policytype', 'subtype', 'srcintf', 'dstintf',
    'trandisp', 'vd',
    'crlevel', 'type'
]

# 2. Fitur Numerik Terpilih (7 Fitur)
selected_numerical_features = [
    'duration', 'sentbyte', 'rcvdbyte', 'sentpkt', 'rcvdpkt',
    'srcport', 'dstport'
]

# Ambil kolom yang tersedia dari df_logs
available_categorical_original = sorted([f for f in
selected_categorical_features if f in df_logs.columns])
available_numerical_original = sorted([f for f in
selected_numerical_features if f in df_logs.columns])

# Proses Fitur Kategorikal
if available_categorical_original:
    for col in available_categorical_original:
        s = df_logs[col].astype(str).fillna('Unknown').replace(' ',
'Unknown')
        le = LabelEncoder()
        df_cat_processed[col] = le.fit_transform(s)
        label_encoders[col] = le

# Proses Fitur Numerik
if available_numerical_original:
    for col in available_numerical_original:
        s_num = pd.to_numeric(df_logs[col], errors='coerce')
        median_val = s_num.median()
        s_num_filled = s_num.fillna(median_val)
        df_num_processed[col] = s_num_filled if
pd.notna(median_val) else 0
```

```

df_num_processed[col] = s_num_filled

# Gabungkan dan Scale
df_combined_processed =
pd.concat([df_cat_processed[available_categorical_original],
df_num_processed[available_numerical_original]], axis=1)
scaler = MinMaxScaler()
df_processed =
pd.DataFrame(scaler.fit_transform(df_combined_processed),
columns=df_combined_processed.columns)
Kode Melatih Model Autoencoder

# Definisi arsitektur model di train_script.ipynb
input_dim_ae = df_processed.shape[1] # Akan bernilai 23
l1_nodes = 12 # Contoh node untuk layer pertama
l2_nodes_bottleneck = 8 # Contoh node untuk bottleneck
input_layer_ae = Input(shape=(input_dim_ae,))
encoder = Dense(l1_nodes, activation="relu")(input_layer_ae)
encoder = Dropout(0.2)(encoder)
encoder = Dense(l2_nodes_bottleneck,
activation="relu")(encoder)
decoder = Dense(l1_nodes, activation="relu")(encoder)
decoder = Dropout(0.2)(decoder)
decoder_output = Dense(input_dim_ae,
activation='sigmoid')(decoder)
autoencoder = Model(inputs=input_layer_ae,
outputs=decoder_output)
autoencoder.compile(optimizer='adam', loss='mse')

# Callback untuk menyimpan model terbaik dan menghentikan
training lebih awal
early_stopping_ae = EarlyStopping(monitor='val_loss',
patience=10, restore_best_weights=True, verbose=1)

```

```

model_checkpoint_ae =
ModelCheckpoint(filepath=autoencoder_save_path,
save_best_only=True, monitor='val_loss', verbose=1)
# Proses Fit (Training)
history_ae = autoencoder.fit(df_processed, df_processed,
                             epochs=50,
                             batch_size=32,
                             shuffle=True,
                             validation_split=0.2,
                             callbacks=[early_stopping_ae,
model_checkpoint_ae],
                             verbose=1)

```

**Kode Melatih model OC-SVM**

```

# Definisi dan pelatihan model OCSVM di train_script.ipynb
# Parameter yang digunakan
ocsvm_nu = 0.005
print(f"Parameter OCSVM: kernel='rbf', gamma='auto', nu={ocsvm_nu},
verbose=True")
# Inisialisasi model
ocsvm = OneClassSVM(kernel='rbf', gamma='auto', nu=ocsvm_nu,
verbose=True)
# Proses Fit (Training)
ocsvm.fit(df_processed)
# Menyimpan model
joblib.dump(ocsvm, ocsvm_save_path)

```