Machine Learning Assignment CH3 slide38

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To determine the critical value for F-statistic:

1. **Choose a significance level (α):**
   This is the probability of rejecting the null hypothesis when it is actually true.
2. **Determine the degrees of freedom (df):**
   Numerator degrees of freedom $df_1 = k$ (number of independent variables or groups being tested).
   Denominator degrees of freedom $df_2 = n - k - 1$(total sample size – number of predictors – 1).
3. **Look up the critical value from the F-distribution table using:**

```
n = 30  # Sample size
k = 3   # Number of independent variables
df1 = k                 # Numerator df (number of predictors)
df2 = n - k - 1         # Denominator df (residual degrees of freedom)
# Set significance level (alpha)
alpha = 0.05
# Calculate critical value from F-distribution
f_critical = f.ppf(1 - alpha, dfn=df1, dfd=df2)
```

If it calculated F-statistic > 2.98, it rejects the null hypothesis — meaning at least one of the independent variables significantly contributes to the model.