BSTS Part 2 Script

Slide 1

Welcome traveler! I hope you are ready to embark on the second stage of your adventure. Be warned! these next two stages will be the most arduous part of your journey. But, they are vital if you seek to know the secrets of BSTS.

Before we begin to unravel the mysteries of *Bayesian* Structural Time Series, we must first understand Structural Time Series (-> Slide 2).

Slide 2

On this stage of the adventure, we will discuss Structural Time Series models. We do not enter the Bayesian context yet. Here, we consider structural models from the classical, or frequentist, perspective. Why you ask? Because Structural Time Series Models are the foundation upon which Bayesian Structural Time Series is built (as you hopefully guessed from the titles). In this video we will discuss several Structural Time Series models including:

(->) the Local Level Model (->) the Local Linear Trend Model (->) models with seasonality. And (->) models with regression components

We will start with the simplest model, then build upon this until we work our way up to the general form of a Structural Time Series model.

(-> Slide 3)

You may have also heard the term *state space model*. This is just another name for structural models that is a consequence of its roots in engineering.

(->) In structural time series modeling, we consider our data to come from some unobserverd process called the *state space*.

(->) The data we observe is generated by this state space, but with added noise.

(->) We attempt to model the unobserved state space instead of directly modeling the data.

The simplest of these models is called the *local level model* (-> Slide 4)

Slide 4

Here, we use y_t to denote the data and

(->) μ_t to denote the unobserved state. The model looks like this

(->)