**Revisions to gtype**

October 4, 2015

The Matlab routine gtype.m has been split in to several new routines.

1. gtype\_sensitivities – prints and plots sensitivities of variables with respect to parameters and initial conditions
2. gtype\_elasticities – computes prints and plots elasticities of variables with respect to parameters and initial conditions
3. gtype\_qoi – computes, prints and plots the quantities of interest and their sensitivities and elasticities with respect to parameters and initial conditions
4. gtype\_cp – computes, prints and plots sensitivities and elasticities of variables and quantities of interest with respect to the user-defined parameters
5. gtype\_R0 – computes, prints and plots R0, its sensitivities and elasticities

In order to separate solution types, I have created a number of new solver routines

1. solve\_elasticities
2. solve\_qoi
3. solve\_qoi\_elasticities
4. solve\_FIM.m
5. solde\_ode.m now accepts a vector of times.

October 11, 2015

In order to separate different kinds of input information, I have create a number of new MuPAD routines CreateUser\*\*\*.mu

1. CreateUserInputs – creates user\_inputs.m -> [DIR,JOB,imap,x0,p0,tfinal,ntsteps,solution\_only,NextGen,R0\_only]
   1. The addition of ntsteps allows the solution to be reported at ntsteps equally spaced points between 0 and tfinal.
2. CreateUserQoI.mu – creates QoI.m -> [qoi, qdim]
3. CreateUserBifndata.mu – creates bifndata.m -> [ilambda,imu,nu,ds,nstep]
4. CreateUserFIMdata.mu – creates FIMdata.m -> [eFIM,qFIM,Fdim,Fp,pest,sig]

October 12, 2015

1. Changed parameter\_estimation.m to solver\_GESS.m
2. Added the capability to read experimental data from a Matlab file experimental\_data.m for parameter estimation if sig=0