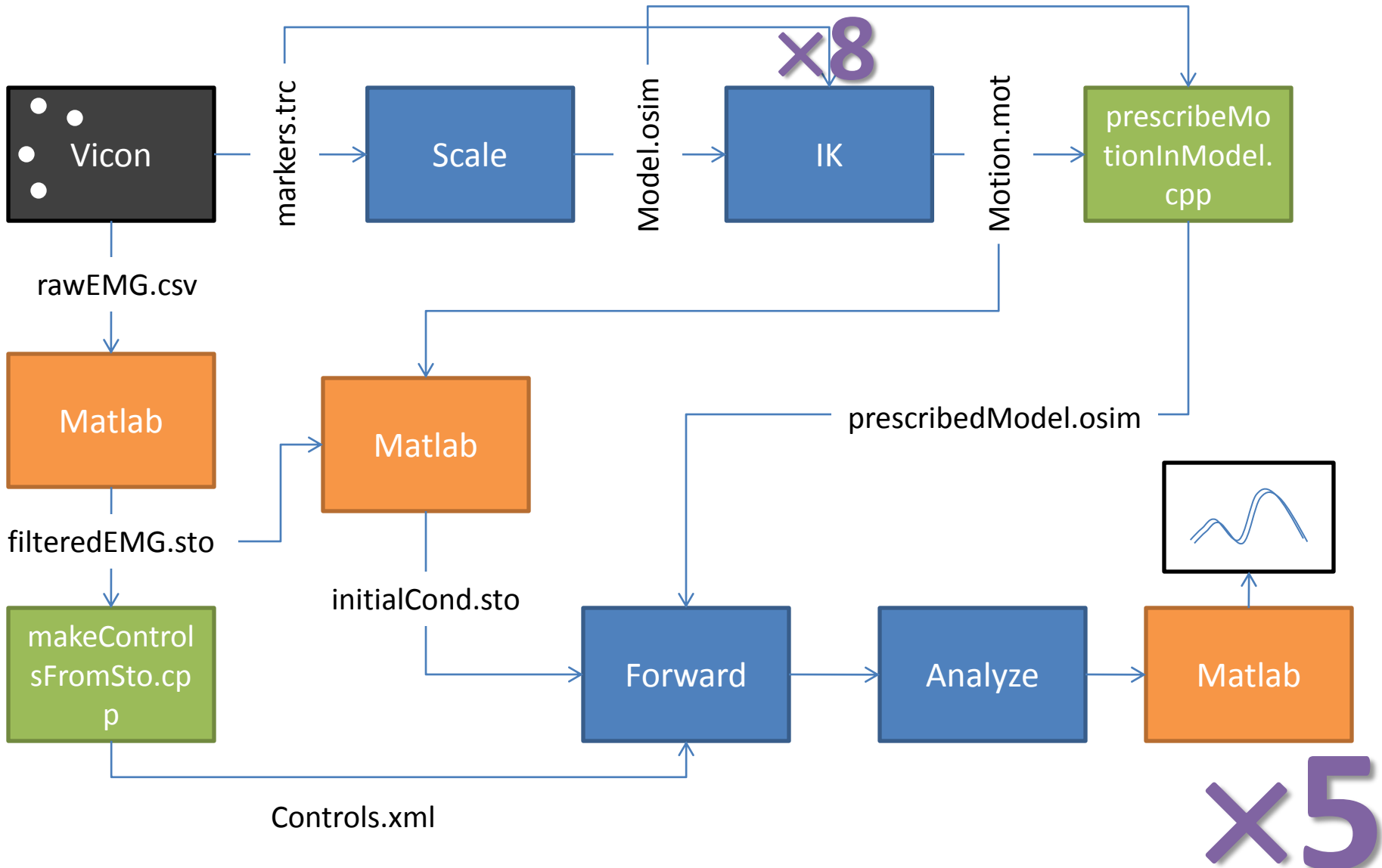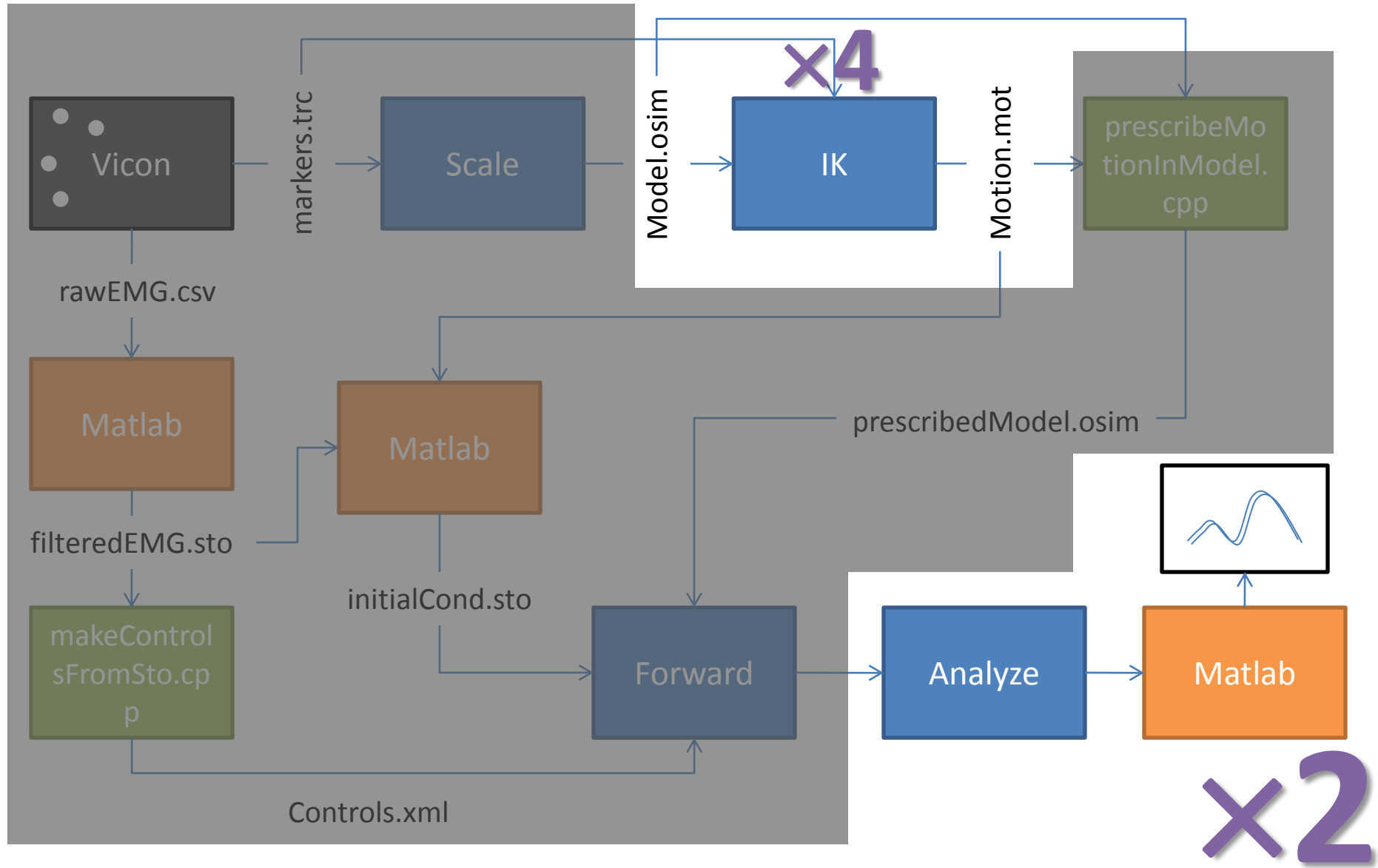# Modeling and Simulation in Bulk

OpenSim Advanced Users Workshop
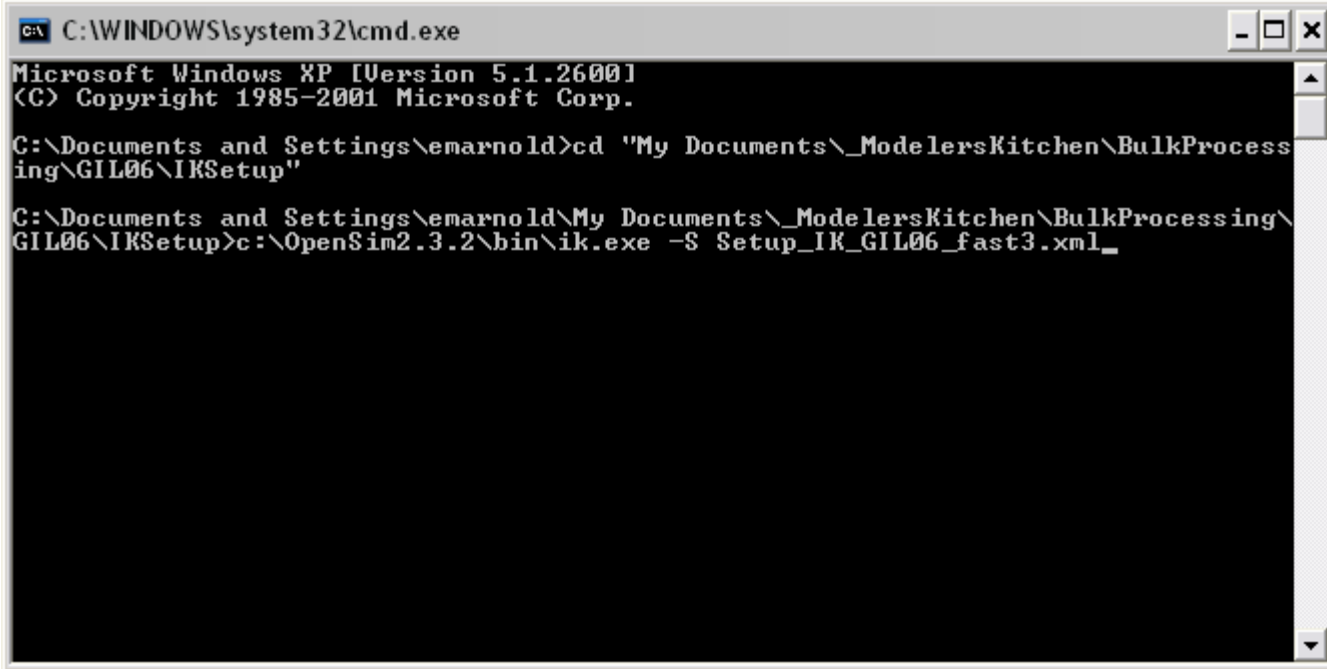
August 16, 2011

My Motivation

Today's Example

You will need

- Matlab
- BatchOpenSimInMatlab.zip
  - Workshop Project Page

Tools in the Command Line


```
C:\WINDOWS\system32\cmd.exe

Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\emarnold>cd "My Documents\_ModelersKitchen\BulkProcess
ing\GIL06\IKSetup"

C:\Documents and Settings\emarnold\My Documents\_ModelersKitchen\BulkProcessing\
GIL06\IKSetup>c:\OpenSim2.3.2\bin\ik.exe -S Setup_IK_GIL06_fast3.xml_
```

C:\OpenSim2.3.2\bin\ik.exe –S Setup_File.xml

Path to OpenSim tool you
want to use
(ik.exe, analyze.exe, etc)

-S for setup

Setup File Name

Output

captured in out.log

Moving to Matlab
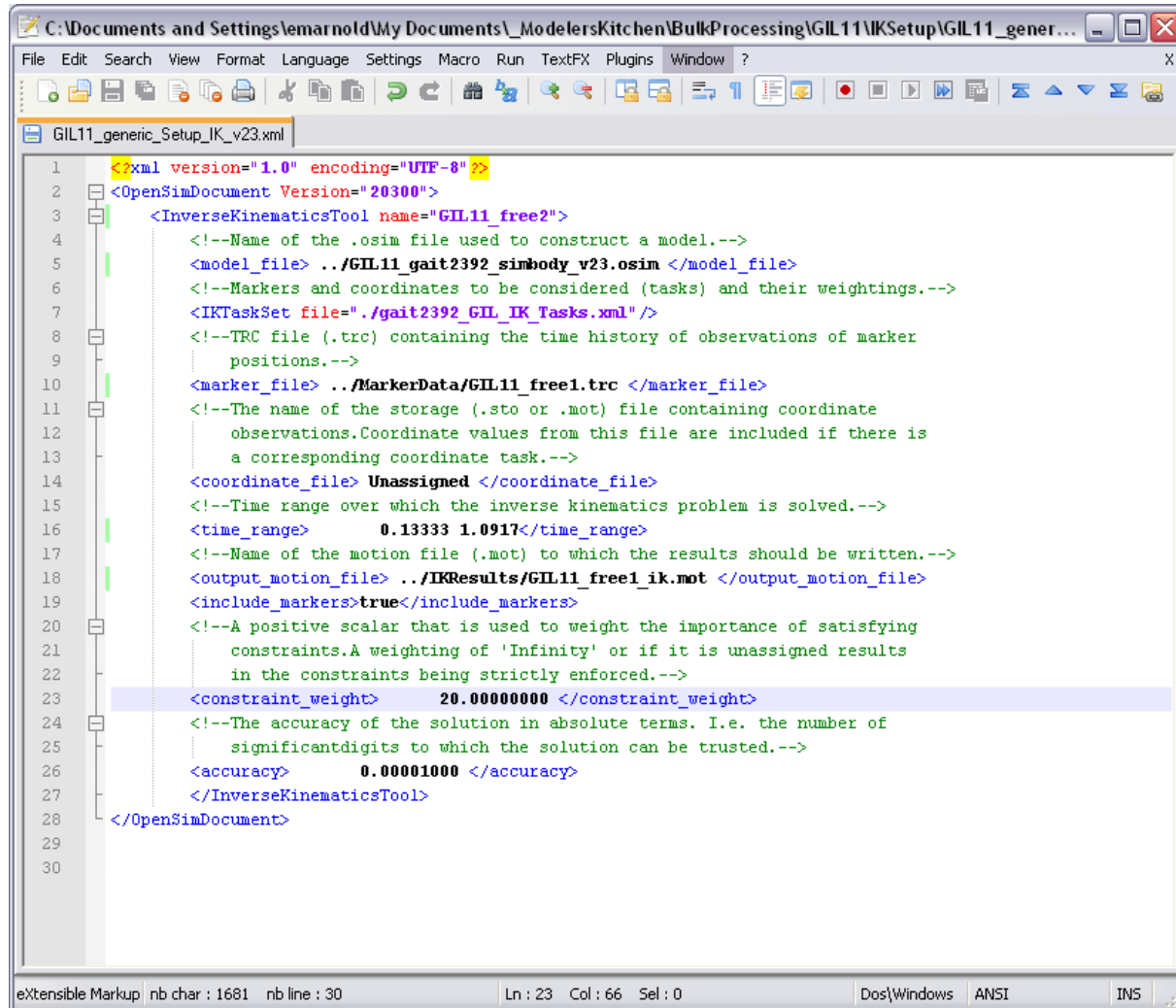
% write a string to send to the command line

Command = 'c:/OpenSim2.3.2/bin/ik.exe –S Setup_File.xml';

% send it to the command line

system(Command);

Setup Files in Matlab

Setup Files in Matlab

- xmlread
  - Parse an xml file and turn it into a document object model
- Get and Set to interact with attributes
  - getElementsByTagName
  - getFirstChlid
  - setNodeValue
  - getAttributes
- xmlwrite
  - Write object back out to an xml file

MATLAB 7.7.0 (R2008b)

Batch Example

- 2 Subjects
- 4 Gait Speeds
  - xslow, slow, free, fast
- Inverse Kinematics
- Muscle Analysis
- Plot results

MATLAB 7.7.0 (R2008b)
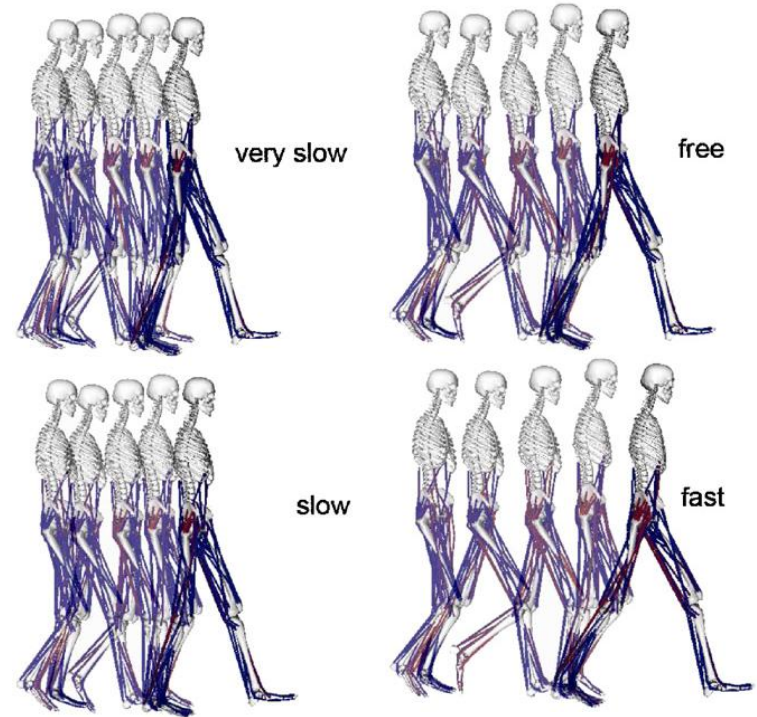
Liu, M.Q., Anderson, F.C., Schwartz, M.H. and Delp, S.L., Muscle contributions to support and progression over a range of walking speeds, Journal of Biomechanics, Nov 2008, 41(15):3243-3252.(2008)

https://simtk.org/home/mspeedwalksims

Tips

- Give gait trials meaningful, consistent names during data collection.
  - ex. Run_200_02.trc not trial1.trc
- Avoid spaces in file and folder names
- Adopt regular folder structure for all subjects
- Use values and text from inputfiles rather than hard coding in matlab
- Verify input/output file conventions when moving between versions
- Use sendmail to automate updates

Following up…

…contribute to the Wiki!