



## **MATLAB TUTORIAL V1.1**

### **3DSuit \*.bvh analysis in Matlab**

#### **Requirements:**

- Matlab 2012
- Zip folder containing Functions
- MOCAP0p136 ToolBox

#### **Toolbox Readme Version 0.136**

This toolbox allows MATLAB to read in and write bvh files and read acclaim files. There are also routines for visualising the files in MATLAB.

Matlab files associated with the toolbox are:

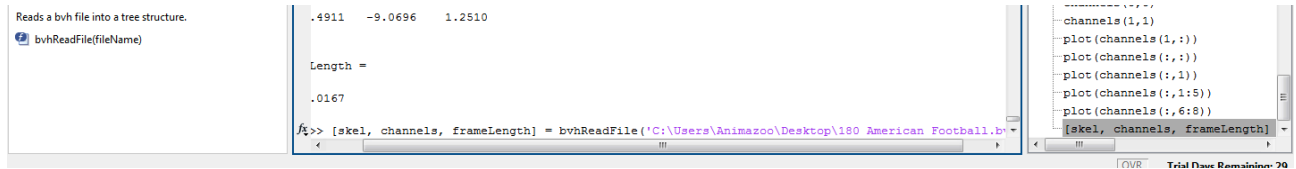
bvhPlayData.m:	Play bvh motion capture data.
xyzpoppeDraw.m:	Helper function for drawing data from Poppe.
xyzankurModify.m:	Helper function for modifying the point cloud from Agarwal and Triggs data.
smoothAngleChannels.m:	Try and remove artificial discontinuities associated with angles.
bvhConnectionMatrix.m:	Compute the connection matrix for the structure.
acclaimPlayFile.m:	Play motion capture data from a asf and amc file.
acclaimGradient.m:	Computes the gradient of x,y,z locations wrt angles.
xyzankurAnim.m:	Animate point cloud of stick man from Agarwal & Triggs dataset.
bvhReadFile.m:	Reads a bvh file into a tree structure.
xyzpoppeVisualise.m:	Draw the Poppe figure return the graphics handle.
bvhModify.m:	Helper code for visualisation of bvh data.
xyzankurDraw.m:	Helper function for drawing the point cloud from Agarwal and Triggs data.
bvhPlayFile.m:	Play motion capture data from a bvh file.
skelReverseLookup.m:	Return the number associated with the joint name.
acclaimLoadChannels.m:	Load the channels from an AMC file.
mocapToolboxes.m:	Toolboxes required by the MOCAP toolbox.
acclaim2xyz.m:	Compute XYZ values given skeleton structure and channels.
xyzankur2joint.m:	Converts data to xyz positions for each joint.
xyzankurAnimCompare.m:	Animate a prediction and ground truth for stick man from Agarwal & Triggs dataset
skelVisualise.m:	For drawing a skel representation of 3-D data.
skelConnectionMatrix.m:	Compute the connection matrix for the structure.
stickModify.m:	Helper code for visualisation of a stick man.
rotationMatrix.m:	Compute the rotation matrix for an angle in each direction.
rotationMatrixGradient.m:	Compute the gradient of rotation with respect to one angle.
skel2xyz.m:	Compute XYZ values given skeleton structure and channels.
mocapResultsCppBvh.m:	Load results from cpp file and visualise as a bvh format.
xyzpoppeAnim.m:	Animate point cloud of stick man from Poppe dataset.
skelPlayData.m:	Play skel motion capture data.
bvhVisualise.m:	For updating a bvh representation of 3-D data.
bvh2xyz.m:	Compute XYZ values given structure and channels.
xyzankurVisualise.m:	Draw the Agarwal & Triggs figure return the graphics handle.
acclaimReadSkel.m:	Reads an ASF file into a skeleton structure.
bvhWriteFile.m:	Write a bvh file from a given structure and channels.
skelModify.m:	Update visualisation of skeleton data.
stickVisualise.m:	For drawing a stick representation of 3-D data.

## Basic Function Examples

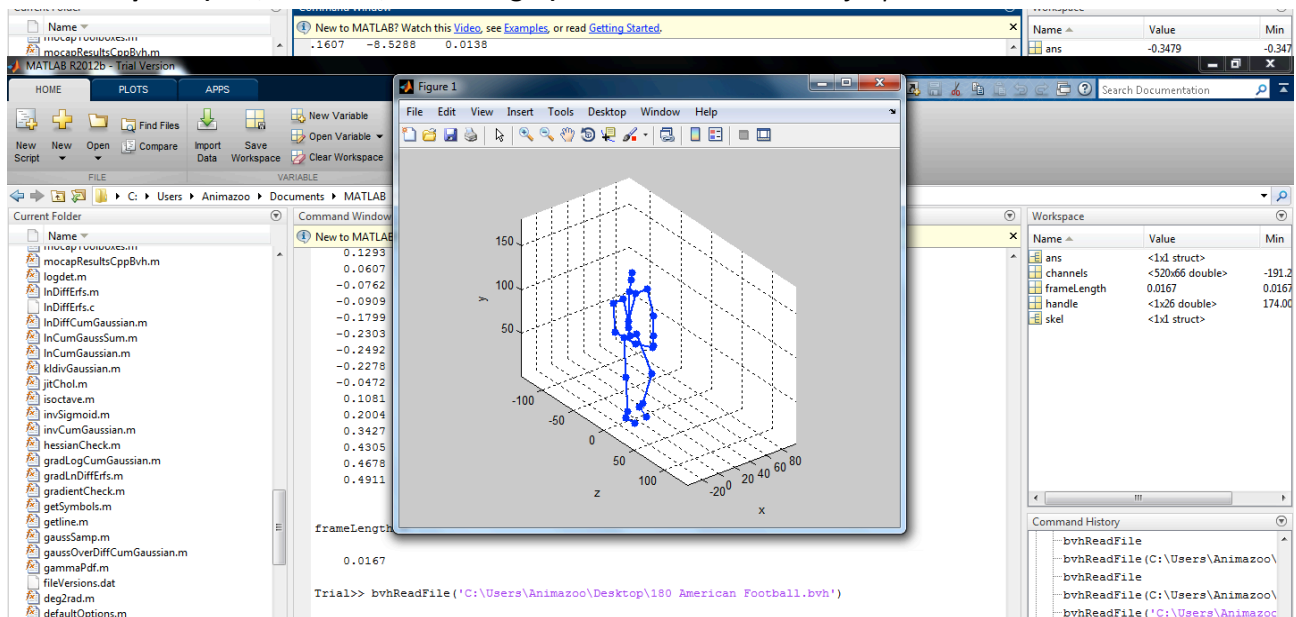
In the folder window (left hand panel in Matlab) navigate to the p136 toolbox folder which contains the above functions we are going to use in this tutorial. Once these functions are listed in the folder window you will be able to call them in the command window.

Try using these 5 simple functions in the command window to get you started with your data analysis:

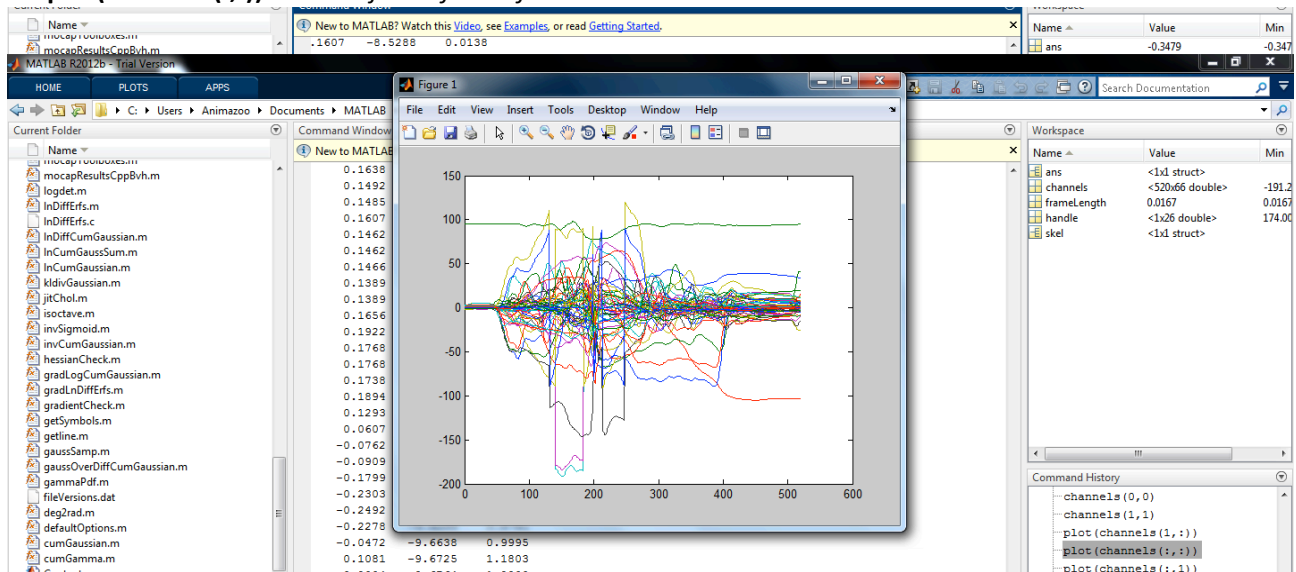
1. **[skel, channels, frameLength] = bvhReadFile('xxx')** - where 'xxx' is the .bvh filepath



2. **bvhPlayData(skel, channels, frameLength)** - where 'xxx' is the .bvh filepath



3. **plot(channels(:, :))** Plots all joints for all frames



4. **plot(channels(:,1))** - Plots all frames joint 1
5. **plot(channels(:,1:5))** - Plot all frames for joints 1 to 5