KEVIN RIG GUIDELINES

Let's start with a quick overview of the blend file!
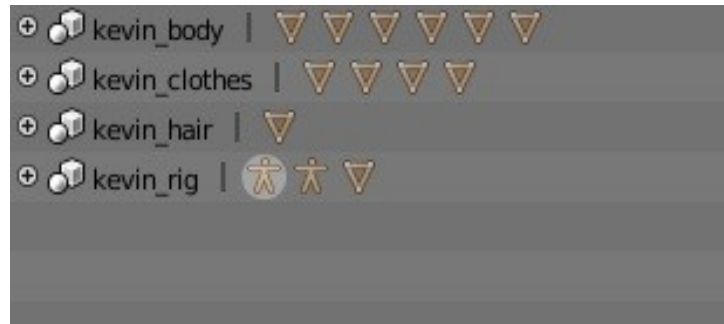
SCENE : NAMING AND ORGANIZATION

Hierarchy:

The objects are grouped under empties located at the center of the world.

The objects are assigned to the group they belong as well, so that you can easily access them using the group filter in the outliner :

There are two armatures in the scene:
The armature named **rig** is the one to be used by the animator.
The armature named **rig_add** which is hidden by default is the additive rig. It is not meant to be edited, you can fully ignored it, but it's good to know some secondary bones rely on it so you must not delete it.

Scene layers:
- Layer 1: Rig
- Layer 2 : Models
- Layer 3 : Lights - Camera
- Last (bottom right): Custom bone shapes

MODELS:

The viewport must be set in texture mode to see the face textures : eyes, eyebrow and lips.

The body contains 3 uv layers for 3 materials: head, chest, legs-arms. Make sure to select the right polygons with the right uv layers if you want to edit anything.

You can easily customize color, bump map materials by selecting an object and tweaking the shader group parameters.
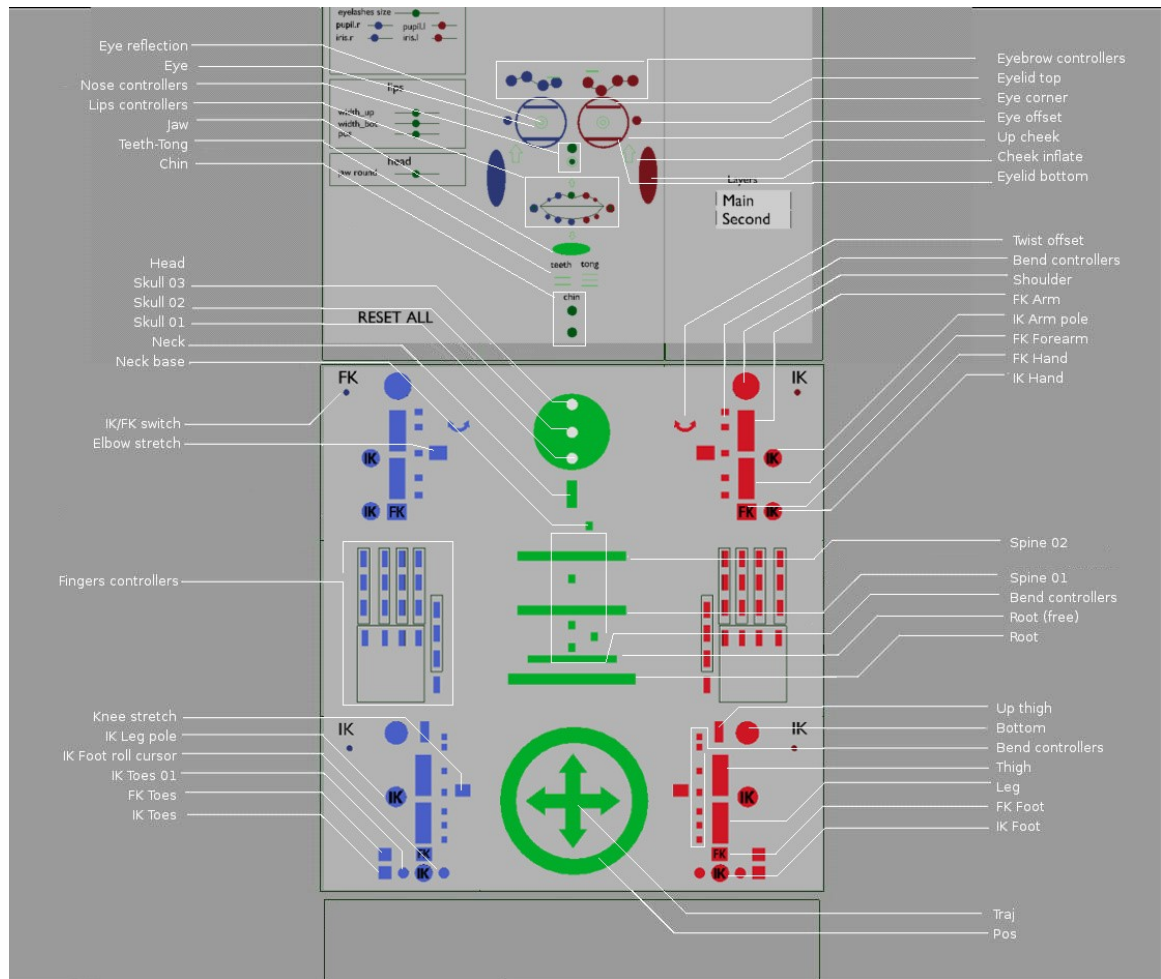
RIG OVERVIEW

Why this rig?

The idea was to build a custom rig because Rigify is great but there are some drawbacks: no stretch on the spine, the IK-FK snap is offset when all of the forearm/leg rotation axes are unlocked, there are too many layers for display that are not needed on a rig that uses a picker panel, no facial setup...
The PitchiPoy human auto-rig is more flexible but there is no ik-fk snap, the twist bones don't roll automatically, and I also wanted to add more secondary controllers for precise shape sculpting and an ergonomic bone picker.

Finally I can offer a better after sale service (customer request, bug) if the rig is mine. So, here it comes!

USER INTERFACE - CONTROLLERS

- **Selecting the controllers bones:**
  You can either select them in the 3d view or use the bone picker interface.
  Be aware a few bones are not easily selectable in the 3d view.
  The rig was first designed to be used with the picker.

- **To hide controllers** on the character in solid view, you can enable the «Only render » function in the properties panel (N key), or select all the controllers and go to the "Pose" menu > Bone settings > Draw wire .

- **Picker Panel :** You can easily select a group of controllers (arms, legs, secondary...) by making a rectangle selection (B key), show/hide layers...

Eye reflection
Eye
Nose controllers
Lips controllers
Jaw
Teeth-Tong
Chin

eyelashes size
pupil.r   pupil.l
iris.r   iris.l

Lips
width_up
width_bot
pout

jaw round

head

teeth tong

chin

RESET ALL

Eyebrow controllers
Eyelid top
Eye corner
Eye offset
Up cheek
Cheek inflate
Eyelid bottom

Layers
Main
Second

Head
Skull 03
Skull 02
Skull 01
Neck
Neck base

IK/FK switch
Elbow stretch

Twist offset
Bend controllers
Shoulder
FK Arm
IK Arm pole
FK Forearm
FK Hand
IK Hand

FK   IK

IK

IK FK

Fingers controllers

FK IK

Spine 02

Spine 01
Bend controllers
Root (free)
Root

Knee stretch
IK Leg pole
IK Foot roll cursor
IK Toes 01
FK Toes
IK Toes

IK   IK

Up thigh
Bottom
Bend controllers
Thigh
Leg
FK Foot
IK Foot

IK

FK IK

Traj
Pos

Layers: Just click these buttons in the picker panel to show/hide a layer for display simplication.

Main: the main controllers for posing the character. You can't do much shape tweak with them but they'll give you a good basis to start.

Secondary: Fine-tuning bones. To scale, move, rotate a specific body part, tweak a shape...

Hair: Display the hair controllers.

Naming:
-The bones named with "c_" prefix means they are "controller": the bones are selectable, they're meant to be animated.
-".l" and ".r" suffix means they belong to the left or right side of the character. Right controllers are blue, left are red.

-".x" suffix means they belong to the center of the character, in green.

Shapes objects for bone display have the prefix "cs_" (custom shapes).

RIG USAGE

Scaling the character:

-Scale the rig object **with the same values** for x, y, z to apply a global scale.

  ◦ I don't recommend to unlock and tweak the scale values of the "c_pos" and
    "c_traj" controllers: due to a limitation of the preserve volume feature of the
    armature modifier it leads to bad deformation on the elbow, knees and
    other parts when they rotate. Maybe the Blender developpers will fix it but
    for now do it at your own risks ;)

  ◦ The main controllers are fully scalable except a few ones. Don't unlock
    the transforms values, it would lead to strange behaviors. Use the
    secondary controllers instead (second layer) to scale a specific part.

Arms and legs:

IK/FK snap:

-select the IK/FK hands/feet controller (**c_hand_ik.l** for example).
-press **N key** to display the buttons and properties panel on the right side of the
3d view.
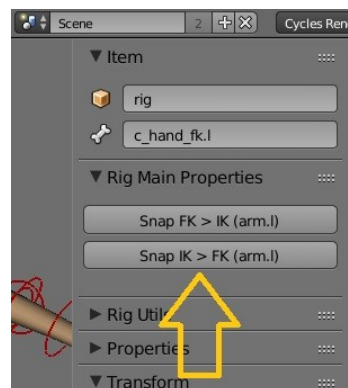
Properties:

auto-stretch: To enable/disable auto-stretch on the IK chain. 1= enable, 0= disable
stretch_length: To specify the length of the chain

To switch to IK/FK manually, select the circle shaped controller under IK/FK text in the picker panel then set the "switch" value in the properties panel to 0 (IK) or 1 (FK).

IK feet features only:

Select the controller **c_foot_roll_cursor** to access these foot motion:

Bank left-right: translate Z axis
Foot rotation from heel/end toes: translate X axis

Select the controller c_foot_01 to rotate the heel from the toes pivot.

Mirror the pose:
◦ Select the controllers you want to mirror then click these buttons:

CLOTHES:

Use the Mask modifiers of the body mesh to hide/unhide the skin under the clothes. It's important to know the Blender fps rate is higher when the Masks modifiers are disable.

KNOWN LIMITATIONS, WORKAROUND AND HINTS

IK-FK:

-Due to a slight imprecision, the elbows/knees may be slightly offset when snapping an FK to an IK chain with autostretch. This is barely noticable unless you stretch to high values. A simple workaround is to snap back the IK to FK or to snap manually the elbow/knee stretch controller.
-The IK-FK text displayed in the UI panel may not update when snapping IK-FK, but don't worry this is simply a display bug, it does switch. Just select a bone in the picker view to update.
-If there are weird interpolations when switching ik-fk, check the switch property curve (switch controller). The keys must be set in constant mode.

Scaling:
-As written above scaling the "c_pos" or "c_traj" controllers will lead to bad deformations at corner, like elbow, knees... This is a limitation of the current "preserve volume" feature of the armature modifier. So scale the rig object instead.
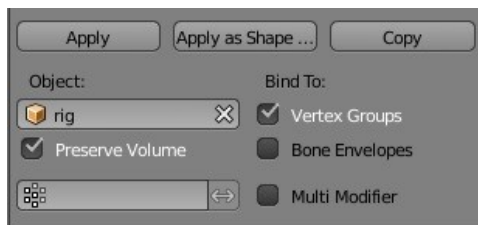
The same may happen when stretching to high values, sometime it's good to disable the preserve volume option in the Armature modifier. Or tweaking the secondary controllers to get a nice shape.
Example with high arm stretching:
1)   Preserve volume enabled
2)   Preserve volume disabled
3)   Preserve volume enabled + secondary controllers correction
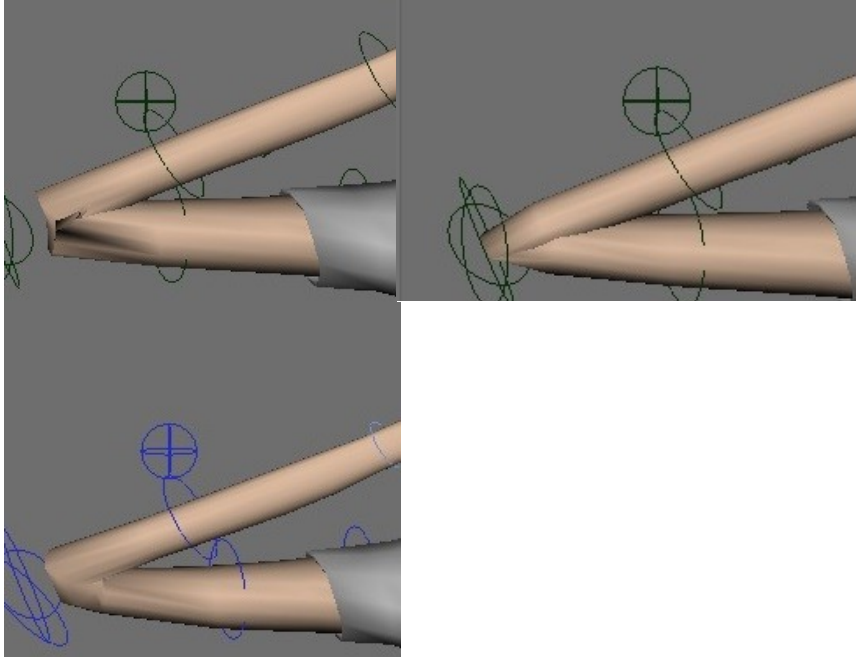
Twist:

-When the arm twist to extreme values, the twist bone may flip. Twisting the shoulder a little should fix it or rotate the arm twist offset controller.

Ok, now you know the most important things about this rig! A little long to read but i'm pretty sure you'll gain from this knowledge. I hope you'll enjoy, and if you have questions, want to comment or suggest something, feel free to let a comment i'll be glad to hear feedback from you.