Experiments on JointTreeNet for capturing the kinematic relationships between joints
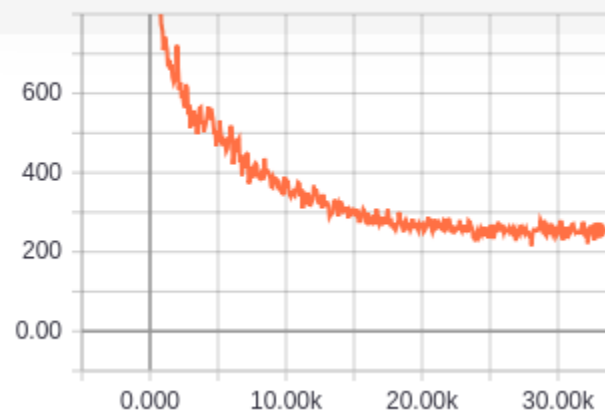
NIE Qiang

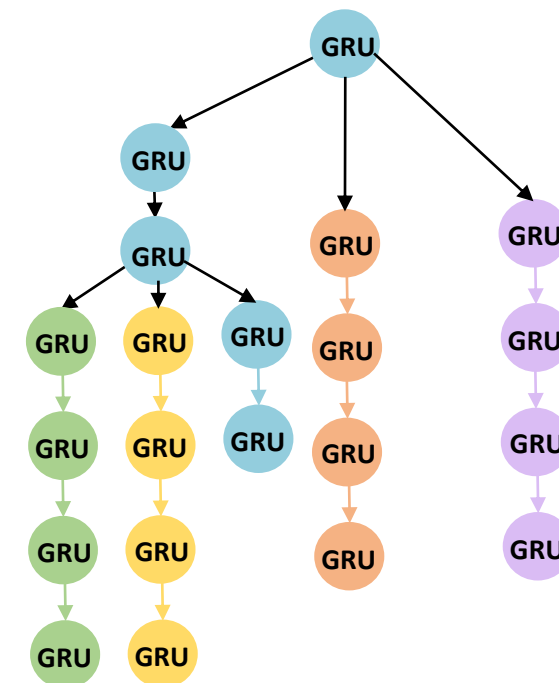# Benchmark_fw

accuracy

train_MPJPE_1

position_loss_1

forward
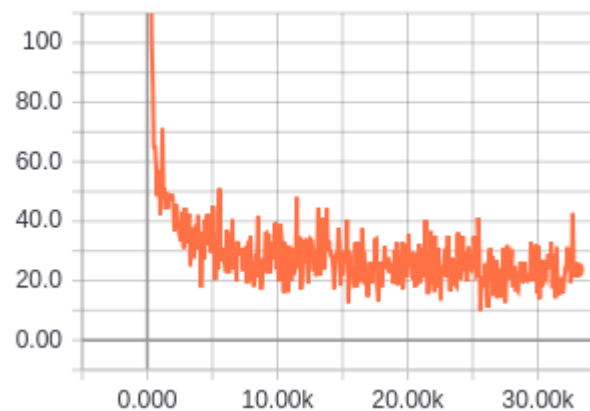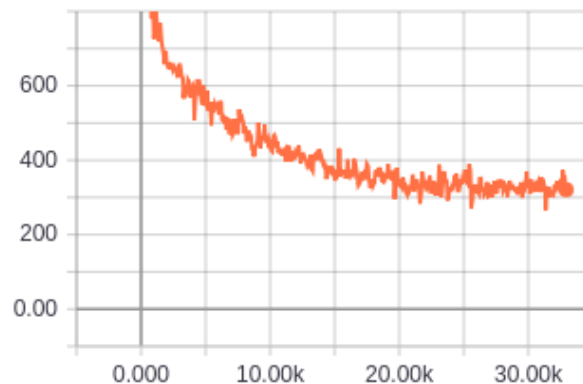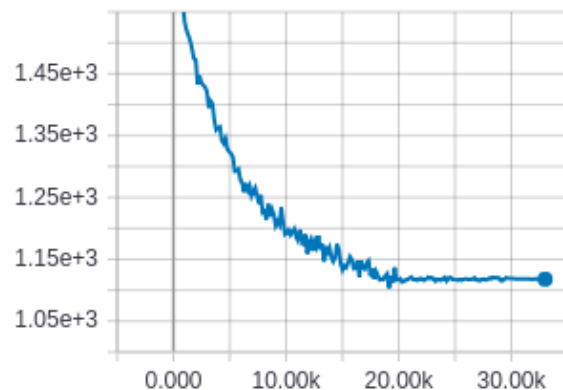
Validation MPJPE=1118/17mm, train
MPJPE=320.7/17mm
Position loss= 23.63

Benchmark_bw
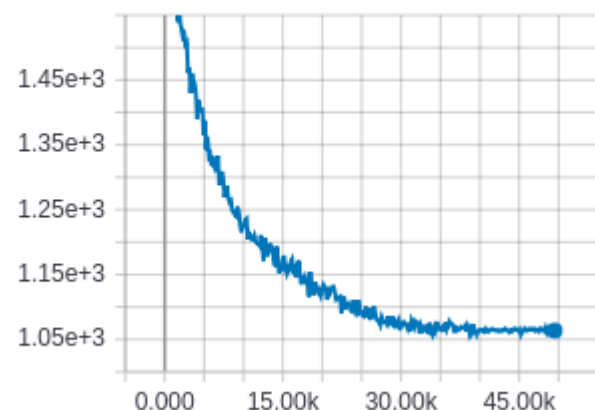
accuracy

position_loss_1

train_MPJPE_1

backward
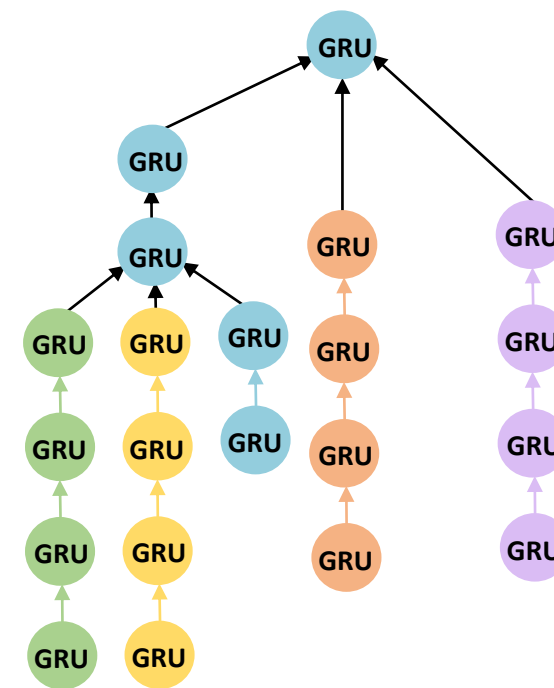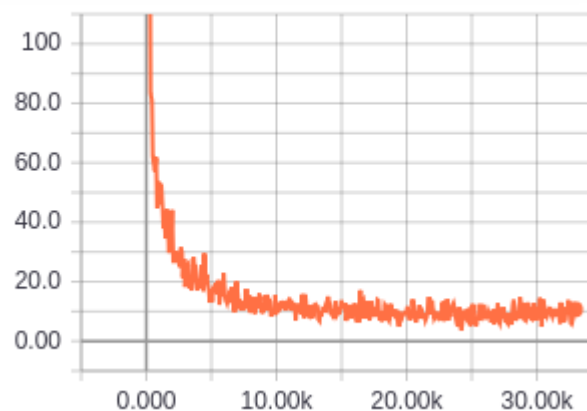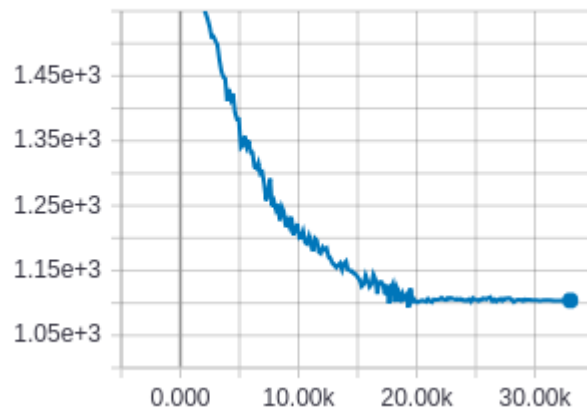
Validation MPJPE=1104/17mm, train
MPJPE=254.7/17mm
Position loss= 10.67

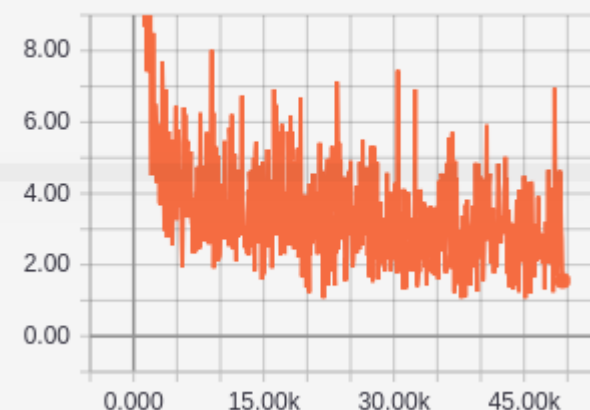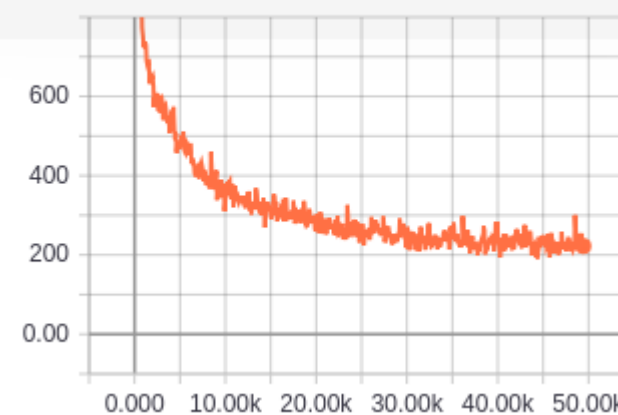# Benchmark_bw with bone length
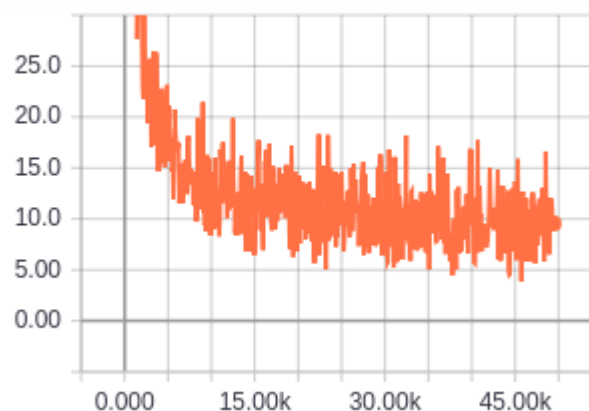
Validation MPJPE=1064mm, train MPJPE=222.4mm
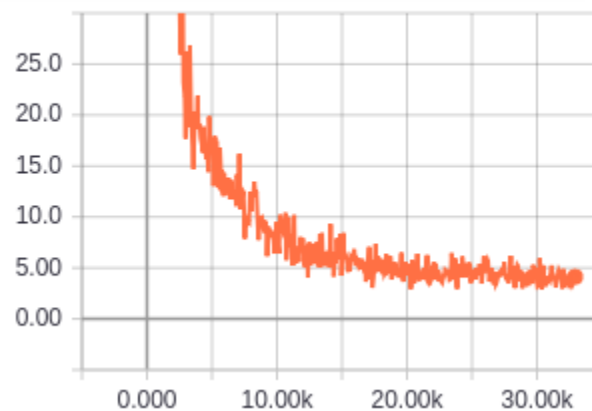Position loss= 9.55 Bonelength loss=1.557

$$Loss = L_P + L_B + R(w)$$

Benchmark_fw&bw concat
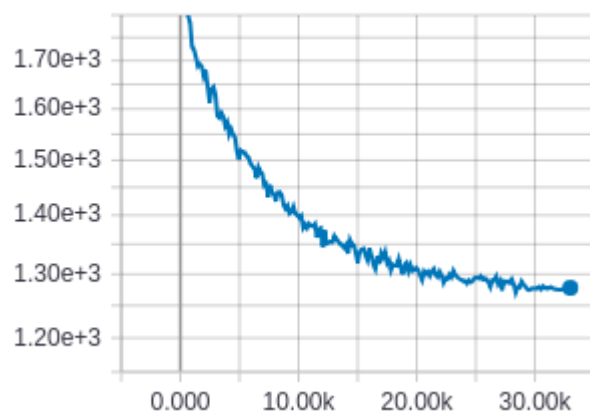
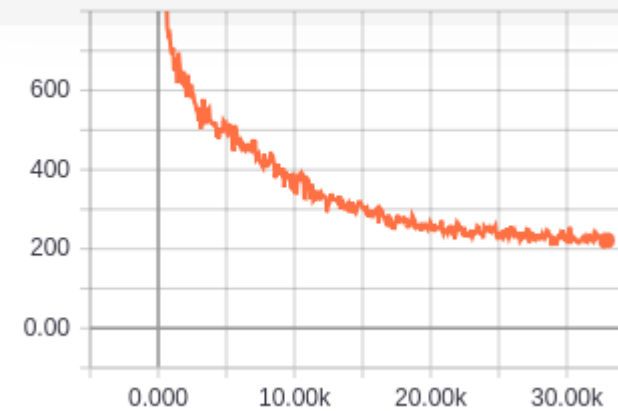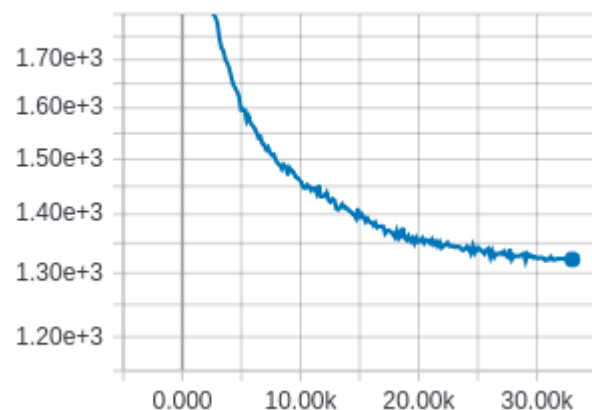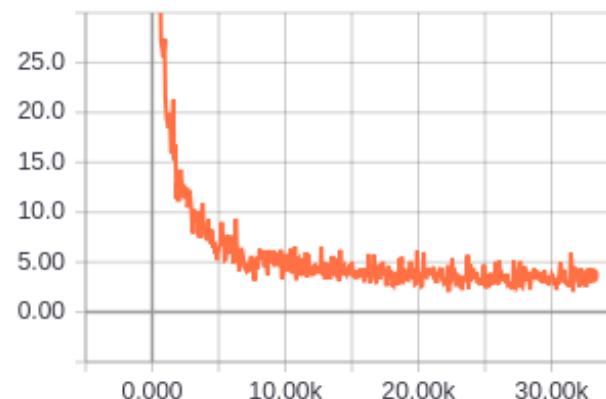Validation MPJPE=1278/17mm, train MPJPE=221.6/17mm
Position loss= 4.131
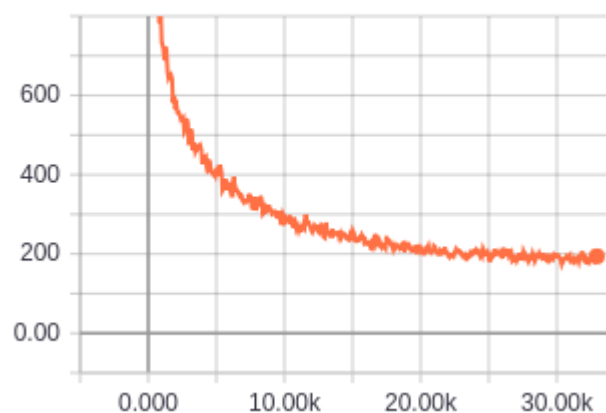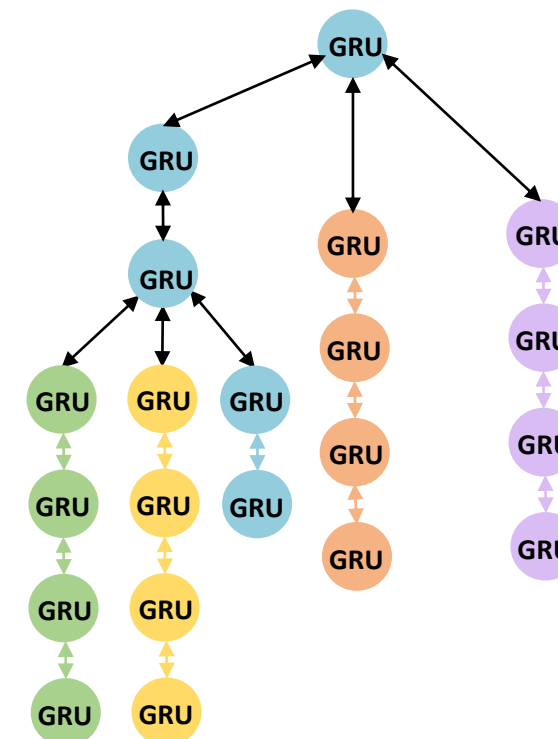
Bidirectional_pos

accuracy

position_loss_1

train_MPJPE_1

bidirectional
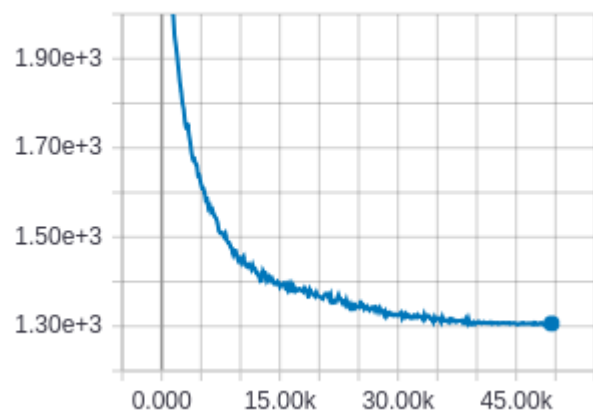
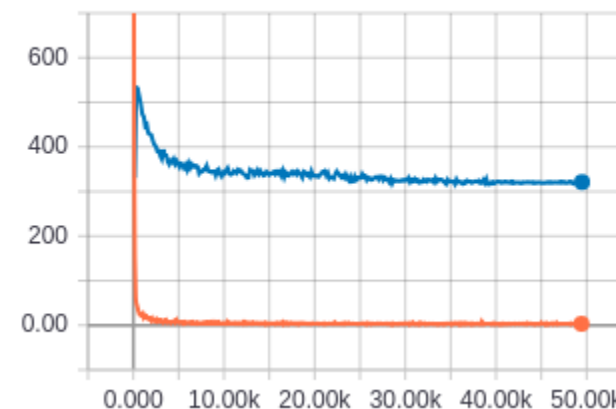Validation MPJPE=1323mm, train MPJPE=194mm
Position loss= 3.66

bidirectional_state
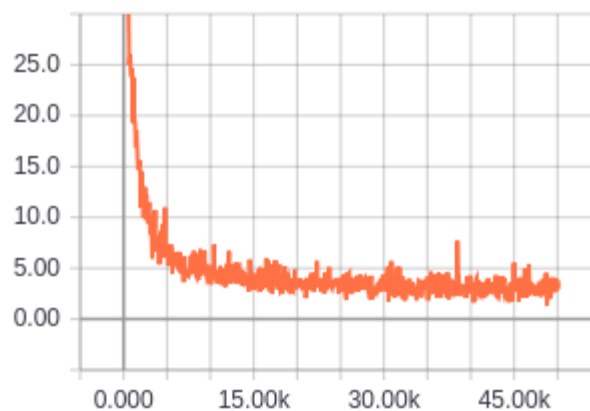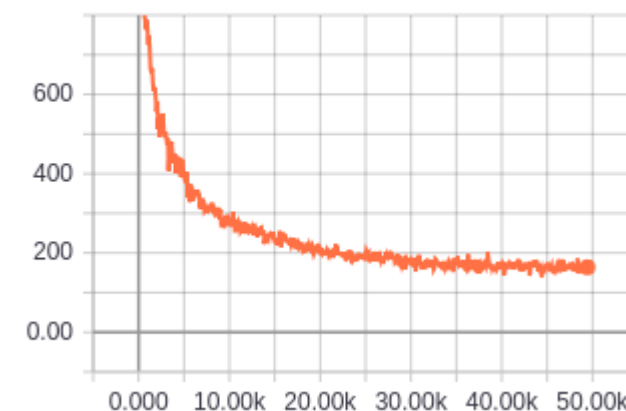
Validation MPJPE=1306mm, train MPJPE=163.9mm
Position loss= 3.352

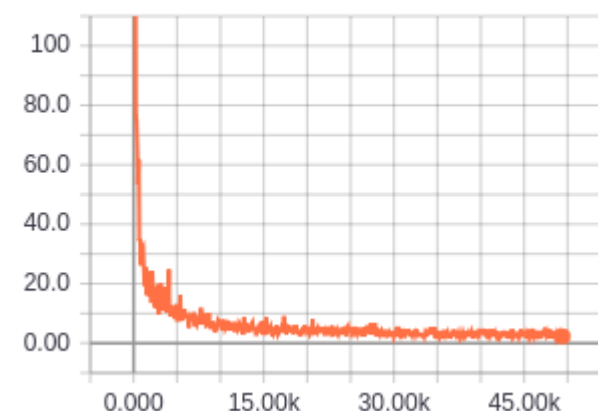# Model SeBiRecursiveNet with bone loss

$$Loss = L_P + L_B + R(w)$$
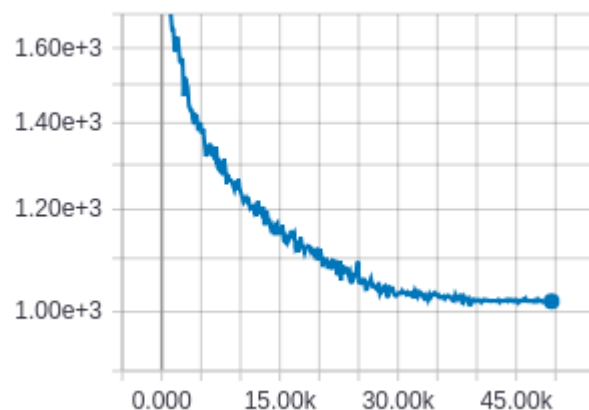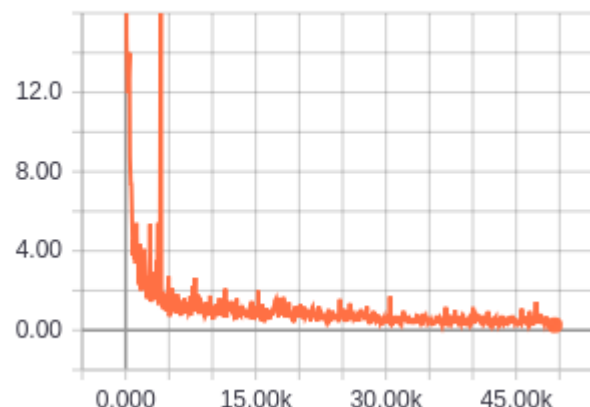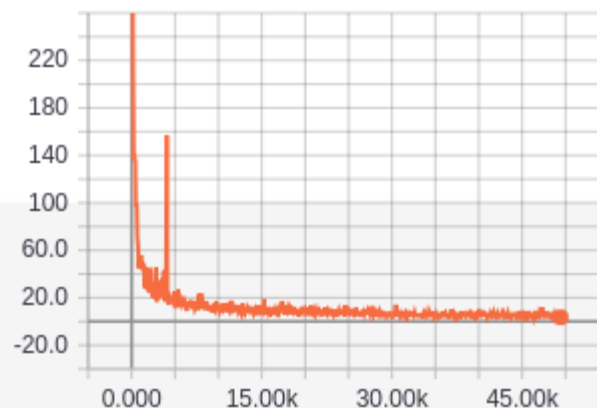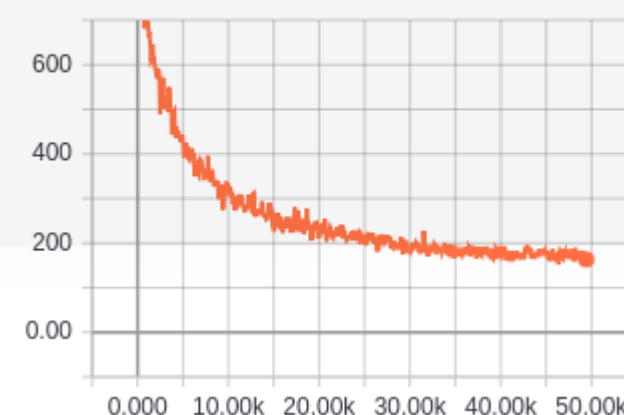
❖ Final MPJPE=1019/17mm,
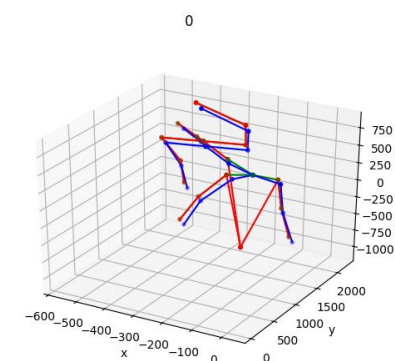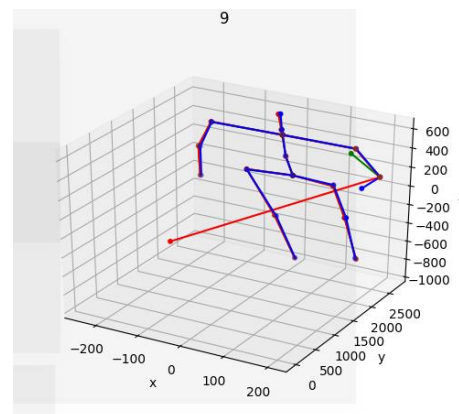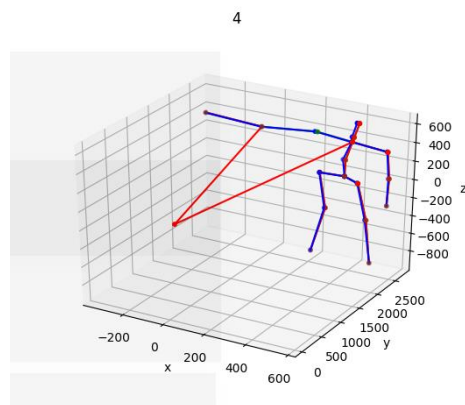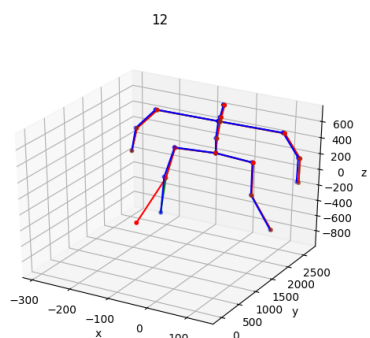   train_MPJPE=163.1/17mm
❖ Bonelength_loss=0.2568.
   Position_loss=3.545

Model SeBiRecursiveNet with bone loss

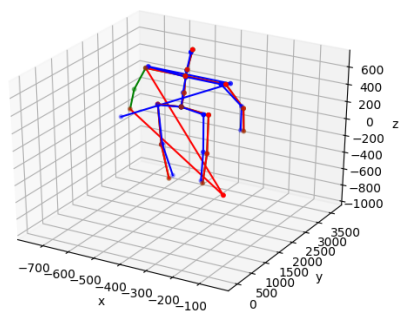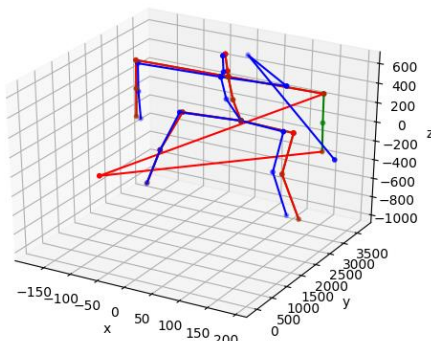Training data
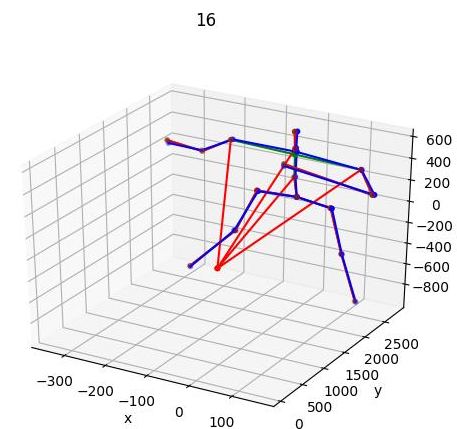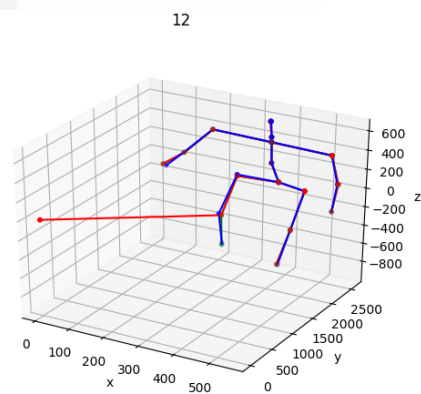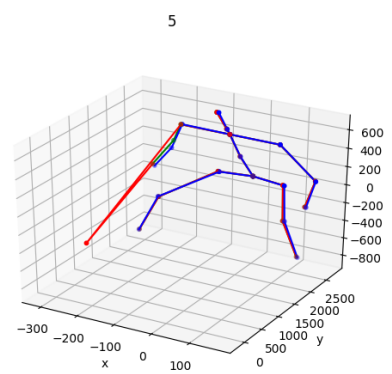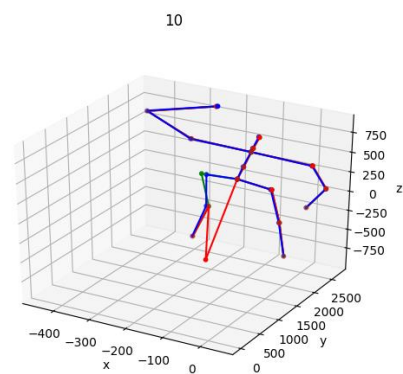
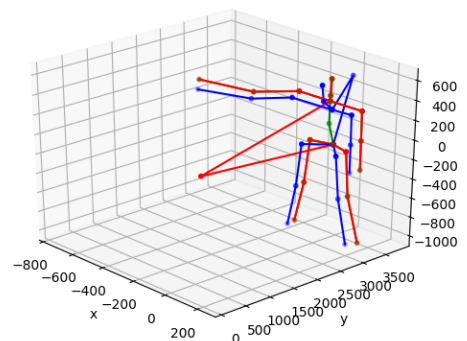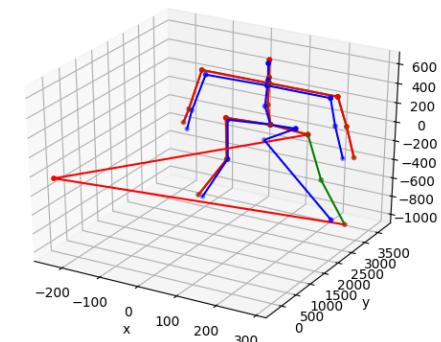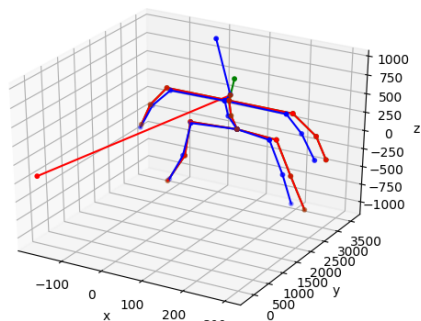# Model SeBiRecursiveNet with bone loss

Test data

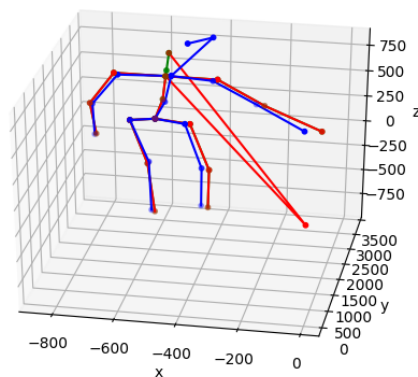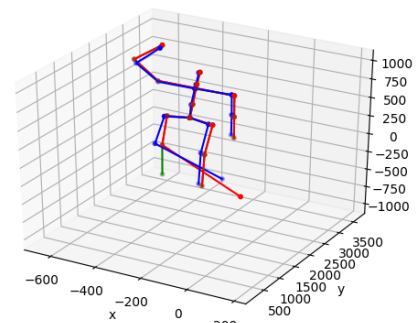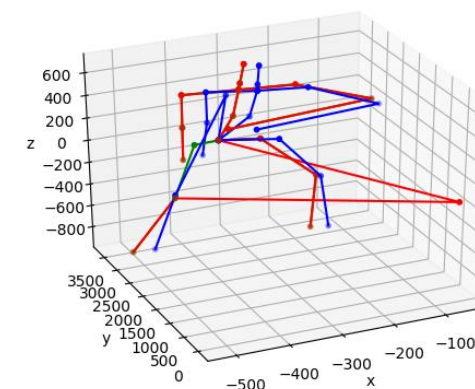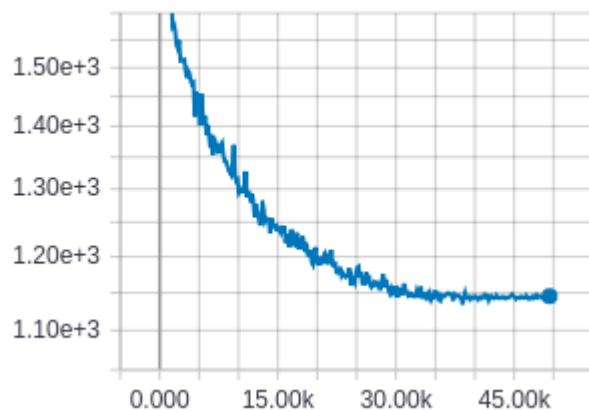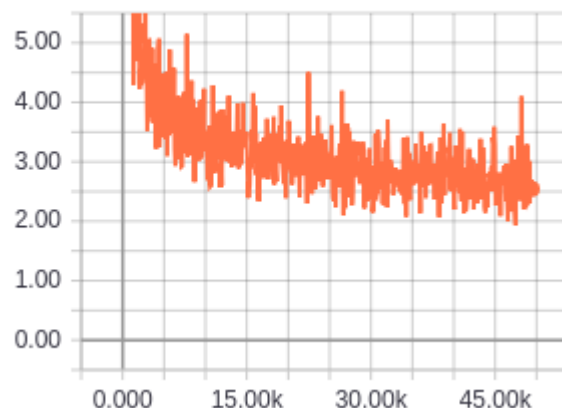# SeBiRecursive with bone symmetry
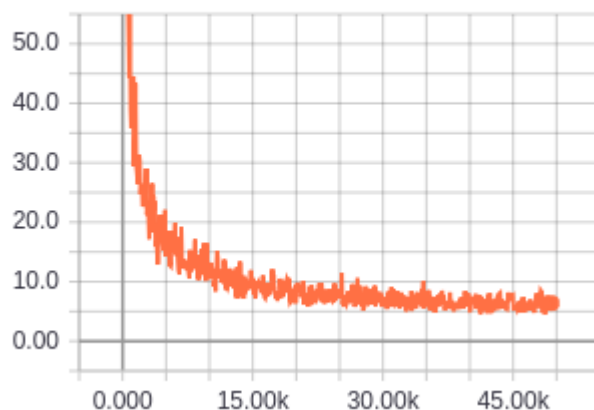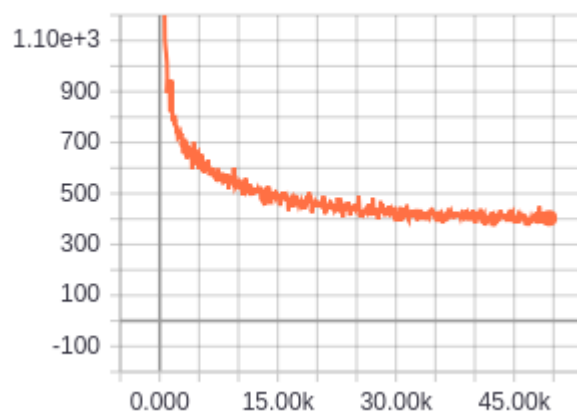
- ❖ Validation MPJPE=1145/17mm, training MPJPE=403/17mm.
- ❖ Position loss=6.39
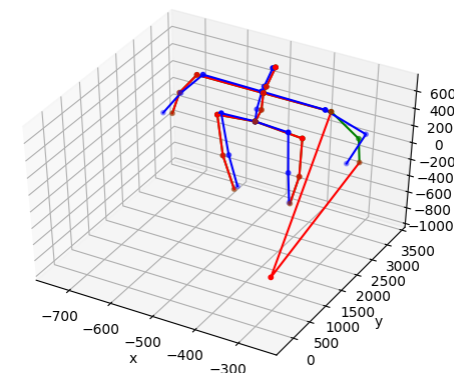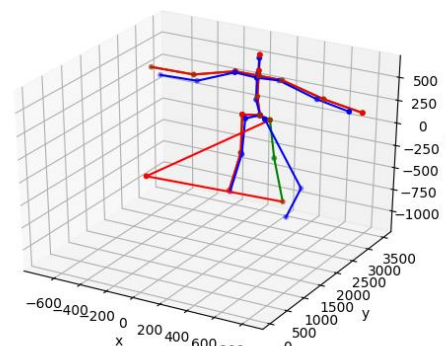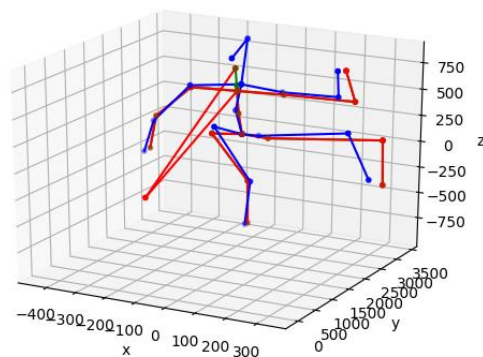- ❖ Bone length loss=2.54.
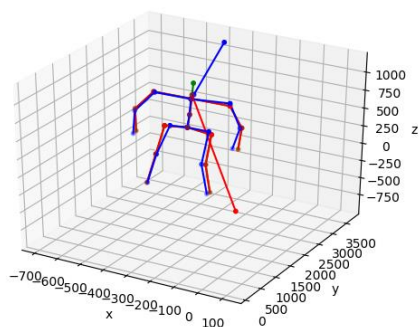
$$Loss = L_P + L_B + L_S + R(w)$$

SeBiRecursive with bone symmetry

Testing data

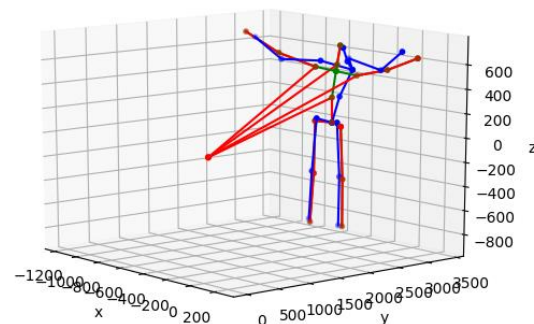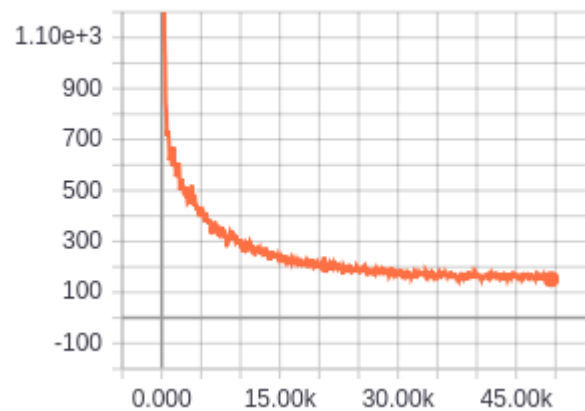# SeBiRecursive without bone loss

❖ Validation MPJPE=1160/17mm, training MPJPE=151.9/17mm.
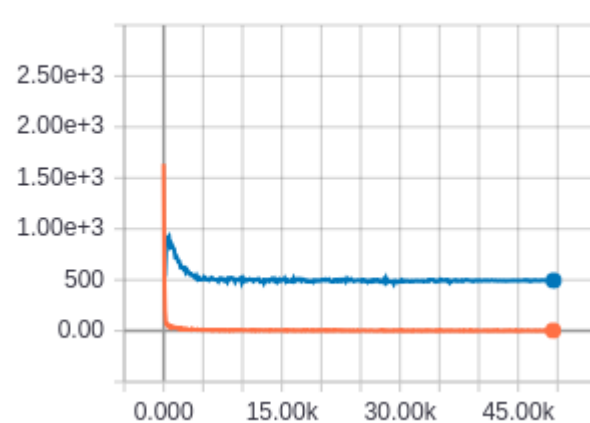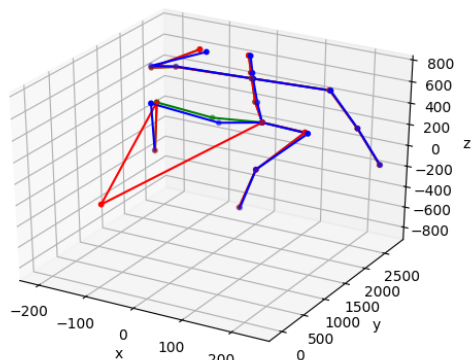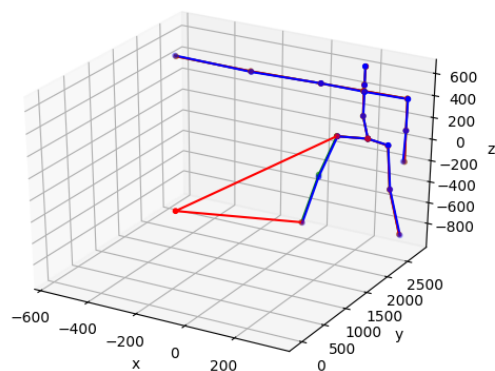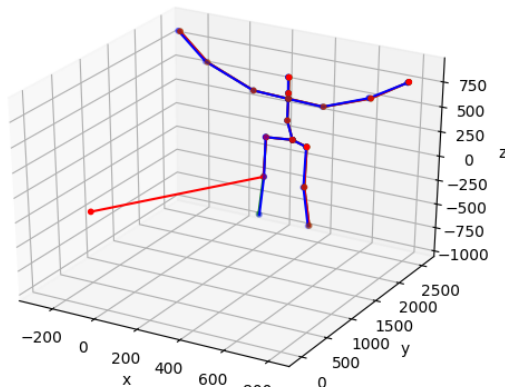❖ Position loss=3.286.

SeBiRecursive without bone loss

SeBiRecursive without bone loss
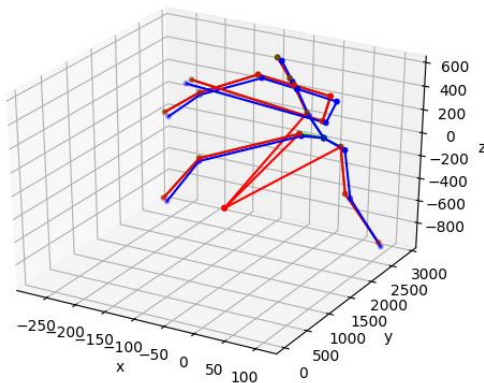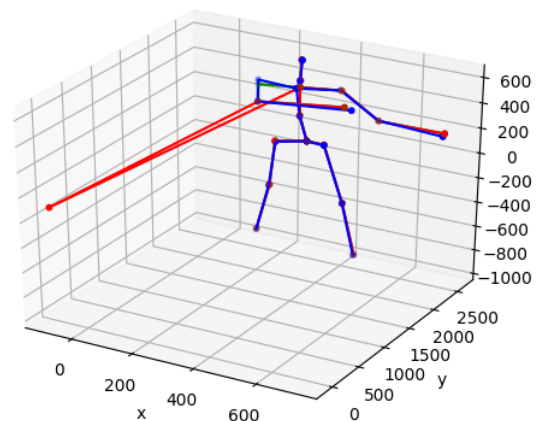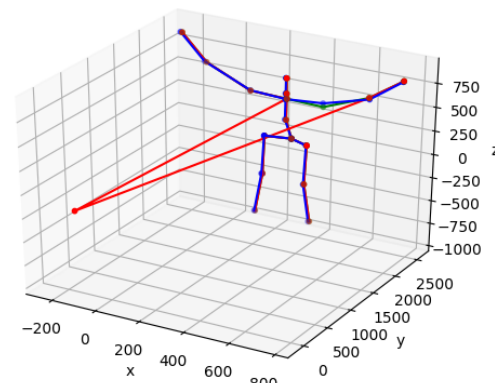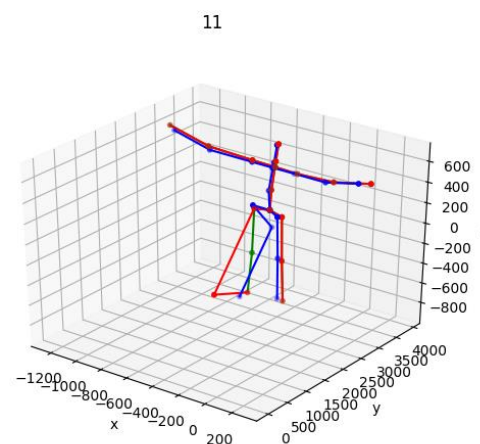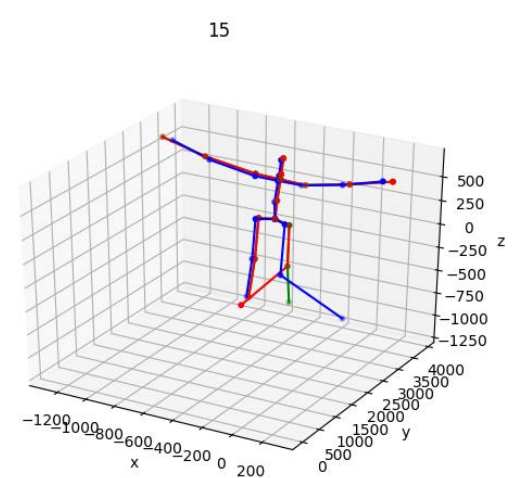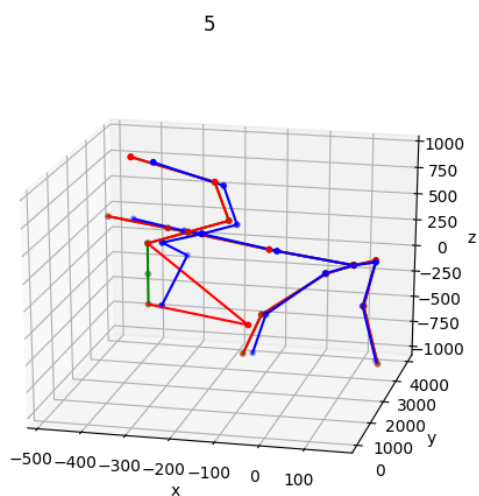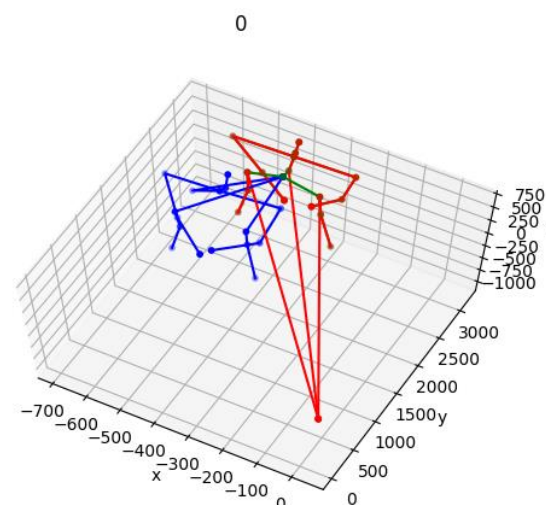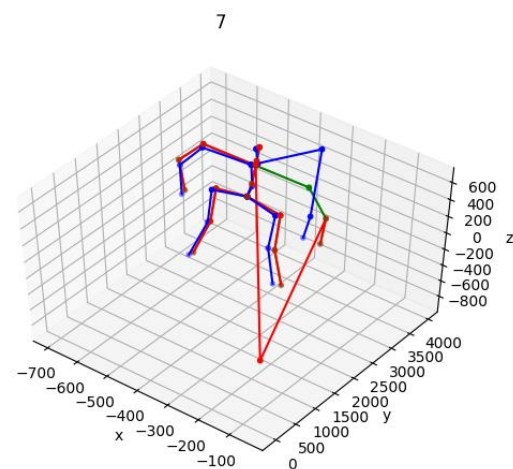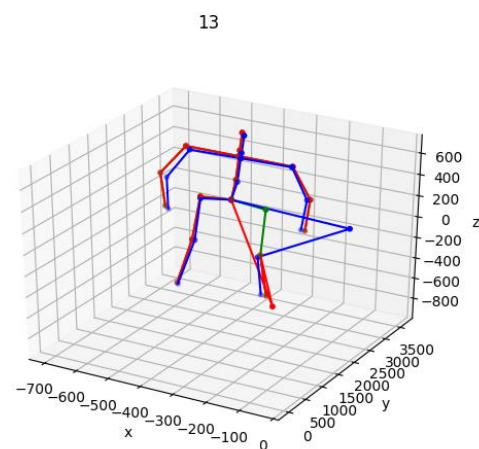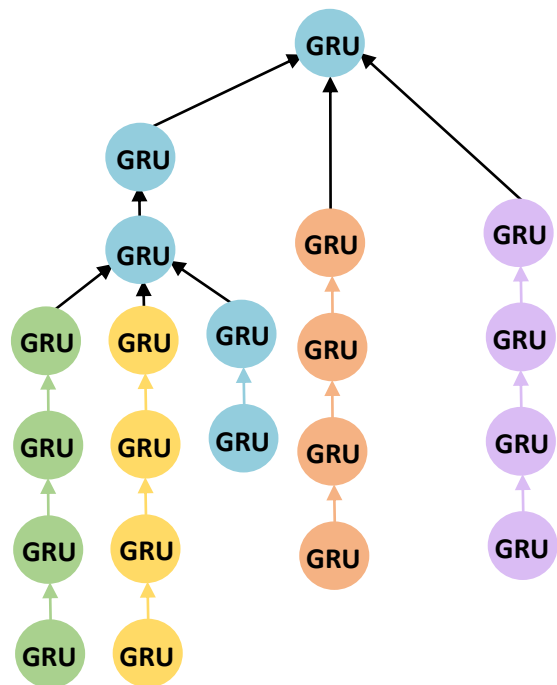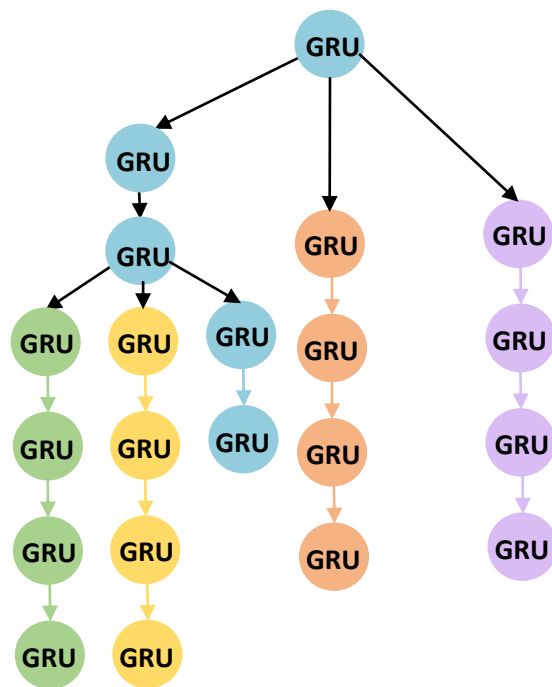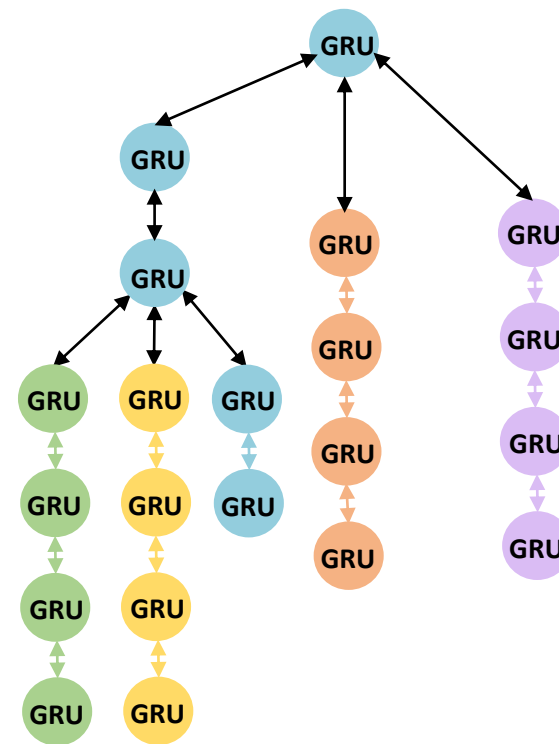
forward   backward   bidirectional

SeBiRecursiveNet