

6/8/2026

A better, more precise searching & posing algorithm! Ability to adjust the center lines would be so cool.
Also ability to get feed on the emotion expressed by the pose.

Questions

1. How does this repositing focus on one joint at a time

2. How does it search for knee direction specifically?

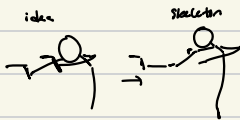
- normalized vector between two joints

3. How does it handle the search for specific angles, distinguish between front & back

- literally just runs the search on that specific area of joints

Conclusion, doesn't really take this into account

What I want Pipeline



Current site don't

- verify = model's anatomical correctness

- are not easy to edit

muscle
tension

- I wish they gave some metric of how comfortable a pose is, how much energy it would take to hold that pose

Goal: A very comprehensive pose searcher from idea to posing to searching

Components

1. Sketch to pose ✓

2. Anatomical correctness verification - I'll create a system to let me easily create rigors

3. Pose to tension heat map

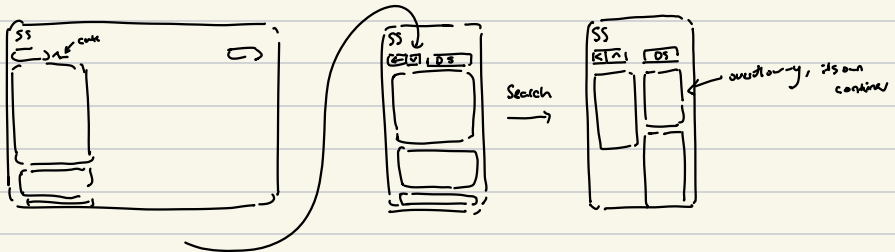
4. Better more comprehensive pose to sequence search

- actually keeps track of radius & arm

① Change in skeleton



7/1/2026 Mobile Layout?

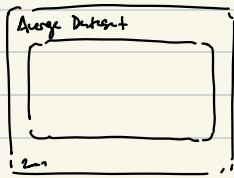


SS, Mobile - Drawer - Button, None when not on mobile? or! hmmm have it exist in both

↖ ← ghost style ↗ two modes, open closed, default open | on mobile, pressing search closes it, should it be in session store?



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← add image for better look?

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at 180° it's right side up, 70° rotation

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- ⁽¹⁾ pelvis rotation changes skeleton's axis relative to it, but ⁽²⁾ pelvis rot still was the original assuming rotation is 0.

- make (2) before (1)

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~~add intro + credits page or subheadings w/ explanation~~

~~body highlight resources~~

- UCI corresponds to loaded page

~~Right click mobile accessibility~~

1) Making it easier to understand

Sticky search - an automatically accurate page search

- hitting a search with camera

- hitting search from photo

- then search from 3D camera gets the wrong angle → ^{probably} doesn't reset camera

- camera $\frac{1}{2}$ actual page is misaligned?

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triggers =

- editor search button, image upload, post card, url navigation

Editor Search Button # input section

↳ uses htmr Search Embedding

↳ hits run search from user search store

1. Set up OG Meta tags

2. Set up google analytics

3. Set up rate limiting

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- clicking on bone toggles edit
- men ? women separate dataset?

Step 1: Create dataset for training with labels based on origin gender

Initial Scan:

- do we pipeline need full body.
- save jpg w/ name, gender & label

Second audit:

- take a bop of images? choose to keep or save
- returns new bop of images

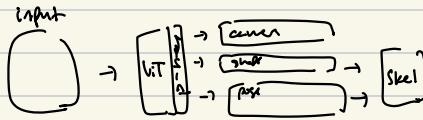
third create HSMR dataset

Step 2: Use dataset to distill a smaller model

- figure how to get it to be like 1mb most - π, π

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pipeline



my pipeline

input → ResNet-18 - $7 \times 7 \times 512$ Feature Map

↓

- Convert to ONNX format

Linear projection to match head dim

- INT8 Quantization + Quantization-Aware

↓

Training

HSQR transformed → 88 output

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hsmr.py how to create distillation pipeline
distillation.py

hsmr.py

- data input is raw_batch into training_step ; -training_step
- -adapt_hsmr.v1 (augments data)

run_train.py

(gets rid of annoying argument and uses Yaml)

- @entrypoint-with-args (exp = 'hsmr/train')
def main(cfg: DictConfig)
- dynamically instantiates the data module & pipeline
- data adaptation to allow for different data types?
- (if ckpt_path ← pre-load model?)
- has system callbacks to automate non-model tasks

HSMR Pipeline 2D image → 3D skeleton

```
class HSMR Pipeline (pl. Lightning Module)
```

```
def __init__(self, cfg: DictConfig, name: str, init_backbone = True):
```

```
    super(HSMR Pipeline, self).__init__()
    self.name = name
```

```
    self.sk_model = instantiate(cfg, SKEL)
    self.backbone = feature_extractor
    self.head = predictor
    self.cfg
```

forward_step

```
features = self.backbone(x[:, :, :, 32:-32])
```

```
pd_params, pd_out = self.head(features)
```

Optimizers

- use two "optimizer_main", "optimizer_disc"

Leah Zhang

8/14/2026 Skelly Search

Plans for public repo

Goal: Obtain metrics on the distilled & sketch model

possible metrics

1. MSE
2. MJSE or joint distance normalized
3. Anatomical possibility

Structure of readme

1. Objective
2. models / methods
3. results
4. discussion & conclusion
5. citations

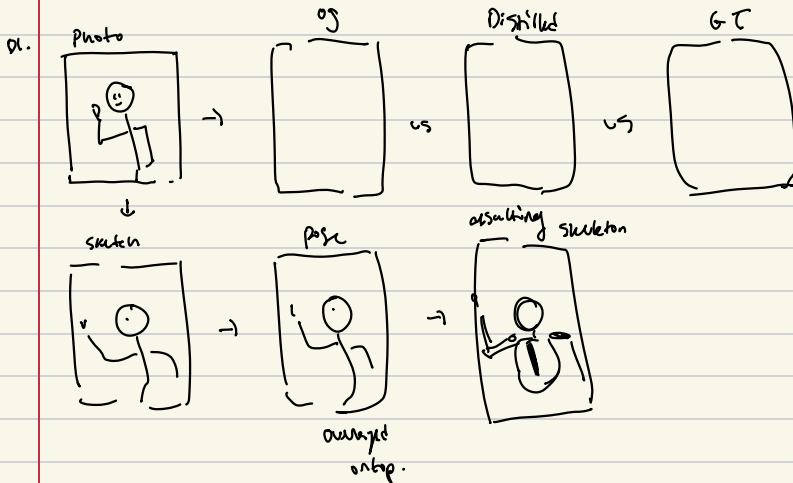
Comparison

1. Compare sketch to pose Heatmap vs. GAT
2. Compare distillation vs. obj. size & accuracy

Publish w/ graphs 4 results from input image, what is ground truth?

1. Sketch = decomposed sketch from photo? or a sketch obj.
2. Distillation = MPII dataset labels are good truth

Possible Sample Templates



M. Heat

or Bar Chart

	M _i	Distilled	Sketch GAT	HM GAT	published comparison
metrics					