Novelty Assessment Report

Paper: InclusiveVidPose: Bridging the Pose Estimation Gap for Individuals with Limb Deficiencies in Video-Based Motion
PDF URL: https://openreview.net/pdf?id=SyQqXAdWUq
Venue: ICLR 2026 Conference Submission
Year: 2026
Report Generated: 2025-12-27

Abstract

Approximately 445.2 million individuals worldwide are living with traumatic amputations, and an estimated 31.64 million children aged 0–14 have congenital limb differences, yet they remain largely underrepresented in human pose estimation (HPE) research. Accurate HPE could significantly benefit this population in applications, such as rehabilitation monitoring and health assessment. However, the existing HPE datasets and methods assume that humans possess a full complement of upper and lower extremities and fail to model missing or altered limbs. As a result, people with limb deficiencies remain largely underrepresented, and current models cannot generalize to their unique anatomies or predict absent joints. To bridge this gap, we introduce InclusiveVidPose Dataset, the first video-based large-scale HPE dataset specific for individuals with limb deficiencies. We collect 313 videos, totaling 327k frames, and covering nearly 400 individuals with amputations, congenital limb differences, and prosthetic limbs. We adopt 8 extra keypoints at each residual limb end to capture individual anatomical variations. Under the guidance of an internationally accredited para-athletics classifier, we annotate each frame with pose keypoints, segmentation masks, bounding boxes, tracking IDs, and per-limb prosthesis status. Experiments on InclusiveVidPose highlight the limitations of the existing HPE models for individuals with limb deficiencies. We introduce a new evaluation metric, Limb-specific Confidence Consistency (LiCC), which assesses the consistency of pose estimations between residual and intact limb keypoints. We also provide a rigorous benchmark for evaluating inclusive and robust pose estimation algorithms, demonstrating that our dataset poses significant challenges. We hope InclusiveVidPose spur research toward methods that fairly and accurately serve all body types. The project website is available at: InclusiveVidPose.

Core Task Landscape

This paper addresses: **Human Pose Estimation for Individuals with Limb Deficiencies**

A total of **27 papers** were analyzed and organized into a taxonomy with **24 categories**.

Taxonomy Overview

The research landscape has been organized into the following main categories:

- **Vision-Based Pose Estimation Methods**
- **Wearable Sensor-Based Pose Estimation**
- **Benchmark Datasets and Evaluation Frameworks**
- **Adaptive Mesh Recovery and 3D Reconstruction**
- **Clinical and Rehabilitation Applications**
- **Motion Prediction and Control for Assistive Devices**
- **Upper-Limb Motion Analysis and Compensation**
- **Mixed Reality and Therapeutic Applications**
- **Conference Proceedings and Review Collections**

Complete Taxonomy Tree

- Human Pose Estimation for Individuals with Limb Deficiencies Survey Taxonomy
- Vision-Based Pose Estimation Methods
  - Generative and Zero-Shot Approaches (1 papers)
  - [1] Diffusion models enable zero-shot pose estimation for lower-limb prosthetic users (Tianxun Zhou, 2025) View paper
  - Synthetic Data Generation and Augmentation (2 papers)
  - [4] WheelPose: Data Synthesis Techniques to Improve Pose Estimation Performance on Wheelchair Users (William Huang, 2024) View paper
  - [13] Data Synthesis Techniques to Improve Pose Estimation Performance on Wheelchair Users (Huang, 2025) View paper
  - Lightweight and Monocular RGB Models (1 papers)
  - [3] The effect of depth data and upper limb impairment on lightweight monocular RGB human pose estimation models (Gloria-Edith Boudreault-Morales, 2025) View paper
  - Multi-View and Fusion-Based Methods (1 papers)
  - [11] DeProPose: Deficiency-Proof 3D Human Pose Estimation via Adaptive Multi-View Fusion (Jiao, 2025) View paper
  - Structure-Guided Deep Learning (1 papers)
  - [10] Human pose estimation using deep structure guided learning (Baole Ai, 2017) View paper
  - View-Invariant Pose Representation (1 papers)
  - [9] View transfer on human skeleton pose: Automatically disentangle the view-variant and view-invariant information for pose representation learning (Qiang Nie, 2021) View paper
- Wearable Sensor-Based Pose Estimation
  - Sparse-IMU Systems for Wheelchair Users (1 papers)
  - [5] WheelPoser: Sparse-IMU Based Body Pose Estimation for Wheelchair Users (li yun-zhi, 2024) View paper

- Benchmark Datasets and Evaluation Frameworks
  - Video-Based Limb Deficiency Datasets ★ (2 papers)
  - [0] InclusiveVidPose: Bridging the Pose Estimation Gap for Individuals with Limb Deficiencies in Video-Based Motion (Anon et al., 2026) View paper
  - [27] INCLUSIVEVIDPOSE: BRIDGING THE POSE ESTIMA-TION GAP FOR INDIVIDUALS WITH LIMB DEFICIENCIES IN VIDEOS (Upper-Limb, n.d.) View paper
  - Prosthetic User Gait Datasets (1 papers)
  - [12] ProGait: A Multi-Purpose Video Dataset and Benchmark for Transfemoral Prosthesis Users (Yin Xiangyu, 2025) View paper
  - General Limb Deficiency Pose Datasets (1 papers)
  - [6] LDPose: Towards Inclusive Human Pose Estimation for Limb-Deficient Individuals in the Wild (J Ying, 2025) View paper
- Adaptive Mesh Recovery and 3D Reconstruction
  - Amputation-Aware Mesh Recovery (2 papers)
  - [18] AJAHR: Amputated Joint Aware 3D Human Mesh Recovery (Cho Hyunjin, 2025) View paper
  - [26] AJAHR: Amputated Joint Aware 3D Human Mesh Recovery Supplementary Material (H Cho, n.d.) View paper
- Clinical and Rehabilitation Applications
  - Gait Analysis and Spatiotemporal Characterization (2 papers)
  - [8] Spatiotemporal Characterization of Gait from Monocular Videos with Transformers (RJ Cotton, 2021) View paper
  - [25] Use of Markerless Pose Estimation for Clinical Gait Analysis of Prosthetic Users Anthony Cimorelli Shirley Ryan AbilityLab Prosthetic Residency Research â¦ (E McClerkin, n.d.) View paper
  - Markerless Motion Capture for Rehabilitation (1 papers)
  - [16] Motion analysis by video for gait evaluation with innovative technology (Hatamzadeh, 2024) View paper
  - Prosthetic Training and Feedback Systems (1 papers)
  - [21] Training Assist System of a Lower Limb Prosthetic Visualizing Floor-Reaction Forces Using a Color-Depth Sensing Camera (Kunihiro Ogata, 2015) View paper
  - Biomechanical Modeling and Musculoskeletal Analysis (1 papers)
  - [24] On the Improvement of the Trans-Tibial Amputee Musculoskeletal Model Scaling by Using a Virtual Marker Approach (Paola, 2019) View paper
- Motion Prediction and Control for Assistive Devices
  - Joint Motion Prediction via Model Reprogramming (1 papers)
  - [7] Enhancing Joint Motion Prediction for Individuals with Limb Loss Through Model Reprogramming (Dey, 2024) View paper
  - Imitation Learning for Biomechanical Replication (1 papers)
  - [15] KinTwin: Imitation Learning with Torque and Muscle Driven Biomechanical Models Enables Precise Replication of Able-Bodied and Impaired Movement from â¦ (Cotton, 2025) View paper
  - Knee Angle Prediction for Prosthetic Control (1 papers)
  - [17] Beyond Gait: Seamless Knee Angle Prediction for Lower Limb Prosthesis in Multiple Scenarios (Pengwei Wang, 2024) View paper
  - Foot Pose Estimation for Robotic Prostheses (1 papers)
  - [20] Foot pose estimation system for robotic leg prostheses (GG Scandaroli, n.d.) View paper
- Upper-Limb Motion Analysis and Compensation
  - Compensatory Motion Quantification (1 papers)
  - [2] Transradial Amputee Reaching: Compensatory Motion Quantification Versus Unaffected Individuals Including Bracing (Adam J. Spiers, 2024) View paper
  - Prosthetic Embodiment and Postural Stability (1 papers)
  - [19] Embodied prosthetic arm stabilizes body posture, while unembodied one perturbs it (Shu Imaizumi, 2016) View paper
- Mixed Reality and Therapeutic Applications
  - Phantom Pain Management via Mixed Reality (1 papers)
  - [22] Mr. mapp: Mixed reality for managing phantom pain (K Bahirat, 2017) View paper
  - First-Person Mixed Reality Gaming (1 papers)
  - [14] High-quality first-person rendering mixed reality gaming system for in home setting (Yu-Yen Chung, 2020) View paper
- Conference Proceedings and Review Collections
  - Academic Symposium Collections (1 papers)
  - [23] Second IYSF Academic Symposium on Artificial Intelligence and Computer Engineering (Qin, 2021) View paper

Narrative

Core task: human pose estimation for individuals with limb deficiencies. This emerging field addresses the challenge of accurately capturing body pose when standard skeletal models assume intact limbs. The taxonomy reveals a multifaceted landscape organized around several complementary directions. Vision-based methods adapt existing pose estimation architectures to handle missing or prosthetic limbs, while wearable sensor approaches leverage inertial and kinematic data for tracking. A critical branch focuses on benchmark datasets and evaluation frameworks, recognizing that standard pose datasets rarely include limb differences and that new data resources are essential for progress. Parallel branches address adaptive mesh recovery for 3D reconstruction, clinical and rehabilitation applications that translate pose estimates into therapeutic insights, and motion prediction for assistive device control. Additional clusters examine upper-limb motion analysis, mixed reality therapeutic tools, and curated conference proceedings that document the field's evolution.

Recent work highlights tensions between data scarcity and model generalization. Several studies introduce specialized datasets for wheelchair users (WheelPose[4], WheelPoser[5]) or develop diffusion-based methods to synthesize training data for prosthetic scenarios (Diffusion Prosthetic Pose[1]). Others propose domain adaptation techniques that repurpose models trained on able-bodied populations (Limb Loss Reprogramming[7], LDPose[6]). Within this landscape, InclusiveVidPose[0] sits squarely in the benchmark datasets branch, contributing a video-based resource that captures diverse limb deficiency presentations. Its emphasis on video data contrasts with depth-focused efforts like Depth Impairment Pose[3] and complements gait-oriented datasets such as ProGait[12]. By providing temporal sequences rather than static frames, InclusiveVidPose[0] enables richer motion analysis and supports downstream applications in rehabilitation and assistive technology, addressing a gap that many vision-based and clinical branches depend upon for validation and real-world deployment.

Related Works in Same Category

The following **1 sibling papers** share the same taxonomy leaf node with the original paper:

1. INCLUSIVEVIDPOSE: BRIDGING THE POSE ESTIMA-TION GAP FOR INDIVIDUALS WITH LIMB DEFICIENCIES IN VIDEOS

Authors: L Upper-Limb | **URL**: View paper

Abstract

â¦ pose estimation datasets, we focus on human pose estimation for individuals with limb â¦ â¦s ability to recognize missing limbs, we propose a new metric, namely Limb-specific Confidence â¦

⚠ Similarity Notice

This paper is highly similar to the original paper; it may be a variant or near-duplicate. Please manually verify.

Contributions Analysis

Overall novelty summary. The paper introduces InclusiveVidPose, a large-scale video dataset for human pose estimation in individuals with limb deficiencies, comprising 313 videos and 327k frames across nearly 400 individuals. Within the taxonomy, it resides in the 'Video-Based Limb Deficiency Datasets' leaf under 'Benchmark Datasets and Evaluation Frameworks'. This leaf contains only two papers total, indicating a sparse research direction. The dataset addresses a critical gap where standard pose estimation resources assume intact anatomy, making this a relatively underexplored area despite its clinical importance.

The taxonomy reveals that neighboring leaves focus on prosthetic user gait datasets and general limb deficiency pose datasets, while sibling branches address vision-based methods, wearable sensors, and clinical applications. The 'Video-Based Limb Deficiency Datasets' node explicitly excludes image-only datasets and those without limb deficiency focus, positioning InclusiveVidPose as complementary to depth-focused efforts and gait-specific collections. The broader 'Benchmark Datasets' branch contains only four papers across three leaves, suggesting that dataset creation for this population remains nascent compared to methodological development in adjacent vision-based and clinical branches.

Among 16 candidates examined, the dataset contribution shows one refutable candidate from 10 examined, the extended keypoint schema shows one from 4 examined, and the LiCC metric shows one from 2 examined. The limited search scope means these statistics reflect top-K semantic matches rather than exhaustive coverage. The dataset contribution appears to have substantial prior work in the form of at least one overlapping resource among the candidates reviewed, while the keypoint schema and evaluation metric each face at least one potentially overlapping prior approach within their smaller candidate pools.

Based on the limited literature search of 16 candidates, the work addresses a sparsely populated research direction with only one sibling paper in its taxonomy leaf. The dataset's video-based temporal sequences and scale differentiate it within the benchmark branch, though the analysis cannot determine whether similar resources exist beyond the top-K semantic matches examined. The extended keypoint schema and LiCC metric each show potential overlap with at least one candidate, warranting closer examination of those specific prior works.

This paper presents **3 main contributions**, each analyzed against relevant prior work:

Contribution 1: InclusiveVidPose Dataset

Description: The authors present the first large-scale video-based human pose estimation dataset focused on individuals with limb deficiencies, containing 313 videos with 327k frames covering nearly 400 individuals with amputations, congenital limb differences, and prosthetic limbs, annotated with pose keypoints, segmentation masks, bounding boxes, tracking IDs, and prosthesis status.

This contribution was assessed against **10 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

---

1. AJAHR: Amputated Joint Aware 3D Human Mesh Recovery

URL: View paper

Brief Assessment

AJAHR[18] introduces Amputee 3D (A3D), a synthetic dataset for 3D mesh recovery of amputees, while the original paper presents InclusiveVidPose, a video-based 2D pose estimation dataset with real-world footage. These datasets serve different tasks (3D mesh reconstruction vs. 2D pose estimation) and use different data modalities (synthetic vs. real video).

---

2. Portable in-clinic video-based gait analysis: validation study on prosthetic users

URL: View paper

Brief Assessment

Portable Prosthetic Validation[34] focuses on validating a gait analysis system for prosthetic users in clinical settings, not on creating a large-scale pose estimation dataset with diverse limb deficiencies and specialized annotations.

---

3. Gait assessment using a 2D video-based motion analysis app in healthy subjects and subjects with lower limb amputationâ€A pilot study

URL: View paper

Brief Assessment

Video Gait Amputation[33] focuses on validating a 2D video-based motion analysis app for gait assessment in healthy subjects and lower limb amputees, comparing it against 3D marker-based systems. It does not present a large-scale pose estimation dataset with annotated keypoints, segmentation masks, or prosthesis status labels.

---

4. Feasibility of using low-cost markerless motion capture for assessing functional outcomes after lower extremity musculoskeletal cancer surgery

URL: View paper

Brief Assessment

Markerless Cancer Surgery[31] focuses on functional outcome assessment after lower extremity musculoskeletal cancer surgery using Microsoft Kinect for motion capture, not on creating a video-based pose estimation dataset for individuals with limb deficiencies. The candidate addresses clinical rehabilitation assessment in cancer patients, while the original contribution is a large-scale annotated dataset for pose estimation research.

---

5. Diffusion models enable zero-shot pose estimation for lower-limb prosthetic users

URL: View paper

Brief Assessment

Diffusion Prosthetic Pose[1] focuses on zero-shot pose estimation using diffusion models for lower-limb prosthetic users, not on creating a large-scale video dataset with comprehensive annotations for individuals with limb deficiencies.

---

6. WheelPose: Data Synthesis Techniques to Improve Pose Estimation Performance on Wheelchair Users

URL: View paper

Brief Assessment

WheelPose[4] focuses on synthetic data generation for wheelchair users using Unity game engine simulations, not on creating a real-world video dataset of individuals with limb deficiencies with manual annotations and residual limb keypoints.

---

7. Comparing the accuracy of open-source pose estimation methods for measuring gait kinematics

URL: View paper

Brief Assessment

Open Source Gait[30] focuses on comparing accuracy of pose estimation methods for measuring gait kinematics, not on creating a video-based pose estimation dataset for individuals with limb deficiencies with comprehensive annotations.

---

8. Validation of portable in-clinic video-based gait analysis for prosthesis users

URL: View paper

Brief Assessment

Video Prosthesis Validation[32] focuses on validating a gait analysis system for prosthesis users in clinical settings, not on creating a large-scale pose estimation dataset for individuals with limb deficiencies. The candidate does not present a dataset with comprehensive annotations like pose keypoints, segmentation masks, and prosthesis status across diverse limb deficiency types.

---

9. LDPose: Towards Inclusive Human Pose Estimation for Limb-Deficient Individuals in the Wild

URL: View paper

Prior Art Analysis

LDPose[6] demonstrates that a similar large-scale dataset for individuals with limb deficiencies was already published. Both datasets focus on pose estimation for individuals with limb deficiencies, include annotations for residual limb endpoints, and provide comprehensive annotations including keypoints, segmentation masks, bounding boxes, and tracking IDs. LDPose[6] contains 28,065 images with 72,716 individuals, while the original paper claims 313 videos with 327k frames covering nearly 400 individuals. The substantial overlap in dataset purpose, annotation types, and target population indicates that LDPose[6] refutes the novelty claim of being 'the first' such dataset.

Evidence

Evidence 1 - **Rationale**: Both papers claim to present 'the first' dataset for pose estimation of individuals with limb deficiencies. LDPose[6] explicitly states it is 'the first publicly available pose dataset for individuals with limb deficiencies', directly challenging the original paper's novelty claim. - **Original**: we introduce inclusivevidpose, the first video-based hpe dataset focused on individuals with limb deficiencies. we collect 313 videos, totaling 327k frames, from 398 participants who have amputations, congenital limb differences, and prosthetic limbs. - **Candidate**: we present the limb-deficient pose (ldpose) dataset, the first publicly available pose dataset for individuals with limb deficiencies.

Evidence 2 - **Rationale**: Both datasets provide comprehensive benchmarks for pose estimation on individuals with limb deficiencies, with similar expert guidance (para-athletics classifiers) and similar annotation quality assurance processes. - **Original**: inclusivevidpose not only demonstrates the limitations of standard hpe models when applied to people with limb deficiencies but also provides a rigorous benchmark for developing more inclusive hpe algorithms. - **Candidate**: ldpose comprises over 28k images for approximately 73k individuals across diverse limb deficiency types and ethnic backgrounds. the annotation process is guided by internationally accredited para-athletics classifiers to ensure high precision.

Evidence 3 - **Rationale**: Both datasets provide similar comprehensive annotations including keypoints, segmentation masks, bounding boxes, and tracking information for individuals with limb deficiencies, indicating substantial overlap in dataset design and purpose. - **Original**: for each frame, we provide standard and residual-limb keypoints, segmentation masks, subject tracking ids, bounding boxes, and the prosthesis status of each residual limb. - **Candidate**: ldpose is the first dataset focused on images of people with limb deficiencies. it contains 28,065 images and 72,716 individuals from various types of limb deficiency and ethnic backgrounds.

---

10. ProGait: A Multi-Purpose Video Dataset and Benchmark for Transfemoral Prosthesis Users

URL: View paper

Brief Assessment

ProGait[12] focuses specifically on transfemoral prosthesis users for gait analysis tasks, whereas the original paper presents a broader dataset covering multiple limb deficiency types (upper and lower limbs, amputations and congenital differences) with specialized residual limb end keypoints. The candidate's scope and annotation schema differ substantially from the original's inclusive approach to diverse limb deficiencies.

Contribution 2: Extended keypoint schema with residual limb endpoints

Description: The authors introduce an extended keypoint schema that builds on the COCO format by adding eight residual-limb endpoint keypoints (above and below elbow/knee on both sides) to explicitly represent anatomical variations in individuals with limb deficiencies, enabling models to distinguish between intact and residual structures.

This contribution was assessed against **4 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

---

1. Diffusion models enable zero-shot pose estimation for lower-limb prosthetic users

URL: View paper

Brief Assessment

Diffusion Prosthetic Pose[1] does not introduce an extended keypoint schema with residual limb endpoints. Instead, it transforms prosthetic limb images into able-bodied representations to enable standard pose estimation models to work without modification.

---

2. INCLUSIVEVIDPOSE: BRIDGING THE POSE ESTIMA-TION GAP FOR INDIVIDUALS WITH LIMB DEFICIENCIES IN VIDEOS

URL: View paper

Brief Assessment

InclusiveVidPose Videos[27] is the same paper as the original submission. Both describe the identical extended keypoint schema adding 8 residual-limb endpoints to COCO's 17 keypoints for individuals with limb deficiencies.

---

3. Human Body Modeling

URL: View paper

Brief Assessment

Human Body Modeling[29] discusses general anatomical conformity in pose estimation but does not describe any specific keypoint schema extensions for residual limbs or limb deficiencies. The candidate's context is too sparse to establish prior work on this specific contribution.

---

4. LDPose: Towards Inclusive Human Pose Estimation for Limb-Deficient Individuals in the Wild

URL: View paper

Prior Art Analysis

LDPose[6] demonstrates prior work on an extended keypoint schema that adds residual limb endpoints to standard COCO keypoints. Both papers extend the COCO 17-keypoint schema by adding 8 residual limb endpoint keypoints (above/below elbow and knee on both sides) to capture anatomical variations in individuals with limb deficiencies. The keypoint definitions and purposes are nearly identical, with both explicitly excluding prosthetic devices and focusing on natural anatomical endpoints.

Evidence

Evidence 1 - **Rationale**: Both papers describe an identical extended keypoint schema: 17 COCO keypoints plus 8 residual limb endpoints at the same anatomical locations (above/below elbow and knee on both sides), demonstrating that LDPose[6] already proposed this schema. - **Original**: we adopt a keypoint schema that builds on the coco format's 17 keypoints by adding 8 residual-limb points. these eight keypoints lie at the anatomical endpoints of residual limbs (left/right above and below the elbow, left/right above and below the knee) and explicitly exclude any prosthetic or assi... - **Candidate**: as shown in figure 2, each instance is annotated with 25 keypoints in our task. the first 17 keypoints follow the mscoco [26] standard to represent the natural human body. the remaining 8 keypoints are designed to mark the endpoints of the residual limbs. these include points for left and right abov...

Evidence 2 - **Rationale**: Both papers explicitly state they extend the COCO schema with 8 residual limb keypoints, using identical numbering schemes (keypoints 17-24 in original, similar structure in LDPose[6]). - **Original**: our extended pose definition is built on the ms coco keypoint schema by adding eight residual limb end keypoints (17 through 24). - **Candidate**: the mscoco 17 standard body keypoints are shown in green, and the newly introduced 8 residual limb keypoints are highlighted in blue.

Contribution 3: Limb-specific Confidence Consistency (LiCC) metric

Description: The authors propose a new evaluation metric called Limb-specific Confidence Consistency that measures whether pose estimation models can correctly distinguish intact limbs from residual or missing limbs by comparing predicted confidence scores for visible keypoints against mutually exclusive anatomically impossible keypoints.

This contribution was assessed against **2 related papers** from the literature. Papers with potential prior art are analyzed in detail with textual evidence; others receive brief assessments.

---

1. OpenLimbTT: an open source transtibial residual limb model for simulation and design

URL: View paper

Brief Assessment

OpenLimbTT[28] focuses on biomechanical modeling and socket design for transtibial prosthetics, not pose estimation evaluation metrics. The candidate discusses residual limb length and consistency measures for socket design, which is unrelated to evaluating pose estimation model confidence scores.

---

2. LDPose: Towards Inclusive Human Pose Estimation for Limb-Deficient Individuals in the Wild

URL: View paper

Prior Art Analysis

LDPose[6] demonstrates prior work on evaluation metrics that assess whether pose estimation models correctly distinguish intact limbs from residual limbs by comparing predicted confidence scores. LDPose[6] proposes 'LD metrics' that introduce an adaptive weight mechanism to penalize anatomically impossible predictions where both residual and intact keypoints are predicted simultaneously. While the implementation details differ slightly, both metrics address the same fundamental problem: ensuring models do not predict mutually exclusive keypoints (intact and residual) on the same limb with high confidence.

Evidence

Evidence 1 - **Rationale**: Both metrics implement mechanisms to detect and penalize mutually exclusive keypoint predictions. LiCC uses confidence comparison, while LD metrics uses adaptive weighting, but both enforce the same anatomical consistency constraint. - **Original**: licc is defined as the average fraction of keypoints whose confidence exceeds that of any exclusive keypoint: licc = 1 |v | x i∈v si > max j∈m(i) sj , where 1(·) is the indicator function. - **Candidate**: the weight γi is set to 0 when the prediction of multiple related keypoints violates realistic anatomical configurations, even if the predicted keypoints are precise and marked as visible in annotation. for instance, if keypoint 21 is correctly predicted but any of the associated keypoints (i.e., 13...

Evidence 2 - **Rationale**: Both metrics share the same goal: ensuring models produce anatomically consistent predictions by preventing simultaneous high-confidence predictions for mutually exclusive keypoints (intact vs. residual limbs). - **Original**: a higher licc indicates stronger consistency: visible keypoints are assigned higher confidence than any impossible alternatives. - **Candidate**: this mechanism ensures that the model does not output mutually incompatible predictions, leading to a more fair and meaningful evaluation for pose estimation in individuals with limb deficiencies.

Appendix: Text Similarity Detection

Textual similarity detection checked 13 papers and found 6 similarity segment(s) across 2 paper(s).

The following **2 paper(s)** were detected to have high textual similarity with the original paper. These may represent different versions of the same work, duplicate submissions, or papers with substantial textual overlap. Readers are advised to verify these relationships independently.

1. INCLUSIVEVIDPOSE: BRIDGING THE POSE ESTIMA-TION GAP FOR INDIVIDUALS WITH LIMB DEFICIENCIES IN VIDEOS

Detected in: Core Task (sibling), Contribution: contribution_2

⚠ **Note**: This paper shows substantial textual similarity with the original paper. It may be a different version, a duplicate submission, or contain significant overlapping content. Please review carefully to determine the nature of the relationship.

---

2. LDPose: Towards Inclusive Human Pose Estimation for Limb-Deficient Individuals in the Wild

Detected in: Contribution: contribution_1, Contribution: contribution_2, Contribution: contribution_3

⚠ **Note**: This paper shows substantial textual similarity with the original paper. It may be a different version, a duplicate submission, or contain significant overlapping content. Please review carefully to determine the nature of the relationship.

References

- [0] InclusiveVidPose: Bridging the Pose Estimation Gap for Individuals with Limb Deficiencies in Video-Based Motion View paper
- [1] Diffusion models enable zero-shot pose estimation for lower-limb prosthetic users View paper
- [2] Transradial Amputee Reaching: Compensatory Motion Quantification Versus Unaffected Individuals Including Bracing View paper
- [3] The effect of depth data and upper limb impairment on lightweight monocular RGB human pose estimation models View paper
- [4] WheelPose: Data Synthesis Techniques to Improve Pose Estimation Performance on Wheelchair Users View paper
- [5] WheelPoser: Sparse-IMU Based Body Pose Estimation for Wheelchair Users View paper
- [6] LDPose: Towards Inclusive Human Pose Estimation for Limb-Deficient Individuals in the Wild View paper
- [7] Enhancing Joint Motion Prediction for Individuals with Limb Loss Through Model Reprogramming View paper
- [8] Spatiotemporal Characterization of Gait from Monocular Videos with Transformers View paper
- [9] View transfer on human skeleton pose: Automatically disentangle the view-variant and view-invariant information for pose representation learning View paper
- [10] Human pose estimation using deep structure guided learning View paper
- [11] DeProPose: Deficiency-Proof 3D Human Pose Estimation via Adaptive Multi-View Fusion View paper
- [12] ProGait: A Multi-Purpose Video Dataset and Benchmark for Transfemoral Prosthesis Users View paper
- [13] Data Synthesis Techniques to Improve Pose Estimation Performance on Wheelchair Users View paper
- [14] High-quality first-person rendering mixed reality gaming system for in home setting View paper
- [15] KinTwin: Imitation Learning with Torque and Muscle Driven Biomechanical Models Enables Precise Replication of Able-Bodied and Impaired Movement from â□¦ View paper
- [16] Motion analysis by video for gait evaluation with innovative technology View paper
- [17] Beyond Gait: Seamless Knee Angle Prediction for Lower Limb Prosthesis in Multiple Scenarios View paper
- [18] AJAHR: Amputated Joint Aware 3D Human Mesh Recovery View paper
- [19] Embodied prosthetic arm stabilizes body posture, while unembodied one perturbs it View paper
- [20] Foot pose estimation system for robotic leg prostheses View paper
- [21] Training Assist System of a Lower Limb Prosthetic Visualizing Floor-Reaction Forces Using a Color-Depth Sensing Camera View paper
- [22] Mr. mapp: Mixed reality for managing phantom pain View paper
- [23] Second IYSF Academic Symposium on Artificial Intelligence and Computer Engineering View paper
- [24] On the Improvement of the Trans-Tibial Amputee Musculoskeletal Model Scaling by Using a Virtual Marker Approach View paper
- [25] Use of Markerless Pose Estimation for Clinical Gait Analysis of Prosthetic Users Anthony Cimorelli Shirley Ryan AbilityLab Prosthetic Residency Research â□¦ View paper
- [26] AJAHR: Amputated Joint Aware 3D Human Mesh Recovery Supplementary Material View paper
- [27] INCLUSIVEVIDPOSE: BRIDGING THE POSE ESTIMA-TION GAP FOR INDIVIDUALS WITH LIMB DEFICIENCIES IN VIDEOS View paper
- [28] OpenLimbTT: an open source transtibial residual limb model for simulation and design View paper
- [29] Human Body Modeling View paper
- [30] Comparing the accuracy of open-source pose estimation methods for measuring gait kinematics View paper
- [31] Feasibility of using low-cost markerless motion capture for assessing functional outcomes after lower extremity musculoskeletal cancer surgery View paper
- [32] Validation of portable in-clinic video-based gait analysis for prosthesis users View paper
- [33] Gait assessment using a 2D video-based motion analysis app in healthy subjects and subjects with lower limb amputationâ□A pilot study View paper
- [34] Portable in-clinic video-based gait analysis: validation study on prosthetic users View paper