Adversarial Seeded Sequence Growing for Weakly-Supervised Temporal Action Localization

Chengwei Zhang, **Yunlu Xu***, Zhanzhan Cheng, et al .*

Shanghai Jiao Tong University
Hikvision Research Institute
Zhejiang University

Contact Mail：xuyunlu@hikvision.com

Program ID: P2B-12

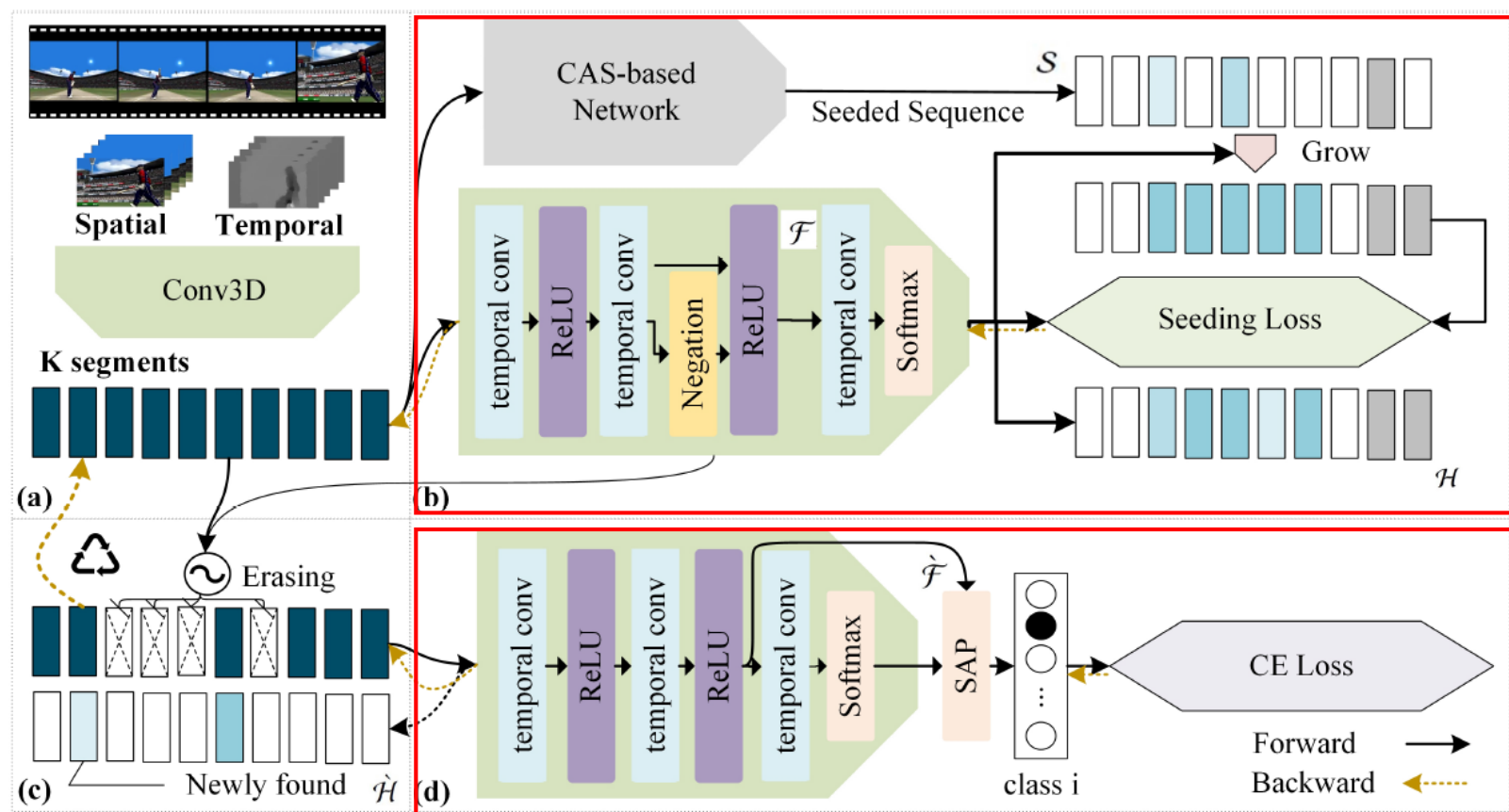# Adversarial Seeded Sequence Growing for Weakly-Supervised Temporal Action Localization

◆ Motivation

- **Weakly-Supervised**: Frame-wise annotations (strong supervision) are heavy burden.

- **Completeness**: Only action response peak in Class Activation Sequence (**CAS**) –based method.

◆ Idea

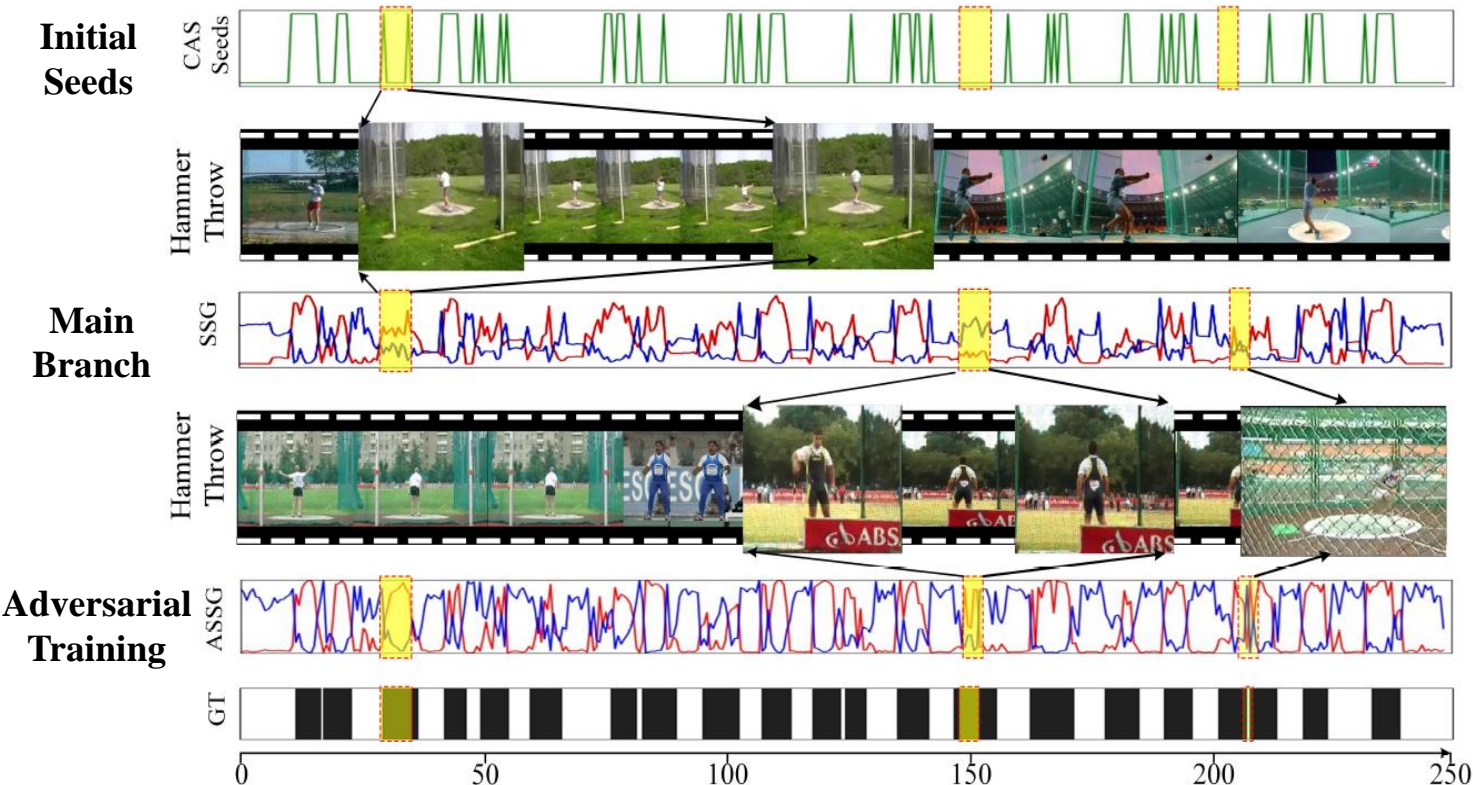- **Seed-Grow Network Design**

- **Adversarial Learning**

Contact Mail： xuyunlu@hikvision.com

Adversarial Seeded Sequence Growing for Weakly-Supervised Temporal Action Localization

◆ **Experimental Evaluation**

Initial Seeds — CAS Seeds

Main Branch — Hammer Throw, SSG

Adversarial Training — Hammer Throw, ASSG, GT

Results on THUMOS'14 Dataset

Method	Label	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Richard et al. [18]	strong	39.7	35.7	30.0	23.2	15.2	–	–
S-CNN [21]	strong	47.7	43.5	36.3	28.7	19.0	10.3	5.3
CDC [19]	strong	–	–	40.1	29.4	23.3	13.1	7.9
Gao et al. [6]	strong	54.0	50.9	44.1	34.9	25.6	19.1	9.9
Xu et al. [27]	strong	54.5	51.5	44.8	35.6	28.9	–	–
SSN [30]	strong	**66.0**	59.4	51.9	41.0	29.8	19.6	10.7
SSAD [13]	strong	50.1	47.8	43.0	35.0	24.6	–	–
TPC [29]	strong	–	–	44.1	37.1	28.2	20.6	12.7
TALNet [4]	strong	59.8	57.1	53.2	48.5	42.8	–	–
Alwasssel et al.[1]	strong	49.6	44.3	38.1	28.4	19.8	–	–
BSN [14]	strong	–	–	53.5	45.0	36.9	33.8	20.8
UntrimmedNet [24]	weak	44.4	37.7	28.2	21.1	13.7	–	–
Singh [23]	weak	36.4	27.8	19.5	12.7	6.8	–	–
Zhong et al. [31]	weak	45.8	39.0	31.1	22.5	15.9	–	–
AutoLoc [20]	weak	–	–	35.8	29.0	21.2	13.4	5.8
W-TALC [17]	weak	55.2	49.6	40.1	31.1	22.8	–	7.6
SPTN [15]	weak	52.0	44.7	35.5	25.8	16.9	9.9	4.3
STAR [28]	weak	68.8	60.0	48.7	34.7	23.0		
SPTN-CAS w/ ASSG	weak	55.6	49.5	41.1	31.5	20.9	13.7	5.9
STAR-CAS w/ ASSG	weak	65.6	59.4	**50.4**	**38.7**	**25.4**	**15.0**	6.6

Contact Mail: xuyunlu@hikvision.com