

Storytelling



Segel et al. InfoVis 2010





Movie Narrative Charts



R. Munroe 2009

Storyline Visualization

- Design Principles
 - **DI** Lines in the same group should appear next to each other.
 - **D2** Otherwise, lines must be far away from each other.
 - **D3** A line must remain straight unless its group changes.



Ogawa and Ma. 2009

Shi et al. TVCG 2019

Level1: Optimization-based Design



Minimizing line crossings



Minimizing line wiggles

StoryFlow. InfoVis 2013





Minimizing white space

Previous Studies



Movie Narrative Charts. XKCD 2009

StoryFlow. InfoVis 2013

Y-Layout. VAST 2017

Aesthetic V.S Expressive





Expressiveness





More Examples



GitHub https://istoryline.github.io/

Level2: Computer Aided-Design

• iStoryline is established on the state-of-the-art automatic method.







Original Layout

iStoryline Layout

Automatic Layout

London

Design Space

Design Principles

- The agent should share the same action space as human users. •
- The agent should resemble the storylines on which users are currently working. •

Agent

Reinforcement Learning

Environment

Actions

Tang et al. iStoryline: Effective Convergence to Hand-drawn Storylines. InfoVis 2018

$$S_{align}^{(k)} = Comp(M_{align}^{L_u}, M_{align}^{L^{(k)}})$$

$$D_{pos}^{(k)} = Dist(M_{pos}^{L_u}, M_{pos}^{L^{(k)}})$$

Target Layout

Network Architecture

Shifting

Bending

Greedy Module

Scaling

Training Dataset

- Training dataset:
 - Lack of hand-drawn storyline visualizations (74).
 - Simulation dataset produced by iStoryline (2000+).

Hand-drawn Storyline

iStoryline

Training Storyline

Agent Demo

PlotThread

Tang et al. PlotThread: Creating Expressive Storyline Visualizations using Reinforcement Learning. InfoVis 2020

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Human interactions

L3: Human-Al Collaboration

For Storyline Visualization https://github.com/tangtan/iStoryline.js

For Online Tool <u>https://github.com/tangtan/</u>PlotThread

