CLAIMS

1. A computer implemented method for assisted viewing of an audio video stream, comprising:

an audio video stream source originating said audio video stream;

associating an audio video stream index with said audio video stream, the audio video stream index comprising a symbolic representation of events within said audio video stream, wherein said audio video stream index is separate from said audio video stream;

a processor receiving user natural language commands from a user input device;

said processor creating audio video stream navigation signals from said user natural language commands by referencing said audio video stream index, wherein said referencing includes identifying one or more events, as specified by said user natural language commands, among said symbolic representation of events comprising said audio video stream index;

said processor using said audio video stream navigation signals to navigate within said audio video stream to said one or more events as specified by said user natural language commands; and

said processor producing, responsive to said navigation within said audio video stream, a controlled audio video stream comprising at least in part said one or more events viewable on a primary display.

2. The method of claim 1, further comprising:

using an audio video stream index generation process to generate said audio video stream index by performing analysis comprising any of:

automatic analysis of said audio video stream;

human analysis of said audio video stream; and

a combination of automatic analysis and human analysis of said audio video stream; wherein said analysis is performed upon any of:

the audio video stream images only;

the audio video stream sound only; and

a combination of the audio video stream images and the audio video stream sound.

3. The method of claim 2, further comprising:

using metadata associated to said audio video stream to improve said audio video stream index generation process with respect to its accuracy, efficiency, specificity or any combination thereof.

4. The method of claim 1, further comprising:

processing said user natural language commands by a natural language interface comprising any of:

an automatic speech recognition system;

a natural language understanding system; and

a combination of an automatic speech recognition system and a natural language understanding system.

5. The method of claim 4, each said user natural language command comprising either of:

a spoken command generated by the user; or

a textual command generated by the user.

6. The method of claim 4, further comprising;

using metadata associated to said audio video stream to improve said natural language interface with respect to its accuracy, efficiency, specificity or any combination thereof.

7. The method of claim 1, wherein said audio video stream is complete and not ongoing.

8. The method of claim 7, wherein said audio video stream index is already present in said complete and not ongoing video stream.

9. The method of claim 7, further comprising:

generating said audio video stream index at any of:

a time when said complete and not ongoing audio video stream is deposited into a controllable audio video stream repository;

a time when said complete and not ongoing audio video stream is played back from said controllable audio video stream repository; and

a time intermediate to deposit of said complete and not ongoing audio video stream into said controllable audio video stream repository and playback of said complete and not ongoing audio video stream from said controllable audio video stream repository.

10. The method of claim 1, wherein said audio video stream is live and ongoing.

11. The method of claim 10, further comprising:

generating said audio video stream index by performing an audio video stream indexing process contemporaneously with arrival of said live and ongoing audio video stream.

12. The method of claim 10, further comprising:

using any one said natural language command to resume display of said live and ongoing audio video stream.

13. The method of claim 1, further comprising:

using any one said natural language command to control an audio video stream repository to display said audio video stream commencing at either of:

a specified indexed event notated within the associated audio video stream index; or

an offset measured or deduced from said specified indexed event notated within the associated audio video stream index.

14. The method of claim 13, said indexed event comprising any one of:

a start or end of the audio video stream;

a start or end of a commercial break; and

any other event notated within the audio video stream index.

15. The method of claim 13, said audio video stream comprising an audio video stream of a sports contest.

16. The method of claim 15, said indexed event comprising any of:

a start or end of the sports contest;

a specified real time within the audio video stream, as measured from either an explicit milestone event or an implicit milestone event;

a specified game clock time within the audio video stream, as measured from either an explicit milestone event or an implicit milestone event;

a suspension or resumption of regulation play or activity;

a start or end of a regulation period;

a change of team roles;

a removal, insertion or substitution of players;

a removal, insertion or substitution of one or more named players;

a scoring event;

a scoring event by a named team or side;

a scoring event of a specified type;

a scoring event of a specified type by a named team or side;

an on-goal shot attempt;

an on-goal shot attempt by a named team or side;

a start or end of a play;

a start or end of a play by a named team, side or player;

an achievement of a non-scoring regulation event;

an achievement of a non-scoring regulation event by a named team or side;

a start or end of a timeout;

a start of end of a timeout by a named team or side;

a commitment of a foul or rule violation;

a commitment of a foul or rule violation by a named team or side;

a commitment of a foul or rule violation by or against a named player;

an assessment of a penalty;

a awarding of a trophy or prize; and

any other event notated within the said audio video stream index.

17. The method of claim 16, said indexed event further comprising any of:

a start or end of a fight, dispute or altercation;

a start or end of a fight, dispute or altercation by, with, involving or between one or more particular named participants or teams, or participants identified by functional roles, optionally identified by team names.

18. The method of claim 1, further comprising:

using any one said natural language command to control an audio video stream repository to display an excerpt of said audio video stream.

19. The method of claim 18, further comprising:

said any one natural language command including language specifying any of:

a direction of playback of the audio video stream;

a speed of playback of the audio video stream; and

a combination thereof.

20. The method of claim 18, said excerpt comprising a single contiguous duration of said audio video stream.

21. The method of claim 18, said excerpt comprising a multiplicity of discontiguous durations of said audio video stream.

22. The method of claim 18, further comprising:

identifying said excerpt of said audio video stream with respect to any one of:

commercial content;

commercial content for a named company or service; and

any other excerpt notated within the said audio video stream index or deduced from notations within the said audio video stream index.

23. The method of claim 20, said audio video stream comprising an audio video stream of a sports contest.

24. The method of claim 23, further comprising identifying said single contiguous duration of said audio video stream with respect to any one of:

a play;

a play of a given type;

a play executed by any one of:

a named team or side; or

a named player;

a named sport;

a named team or side;

a named player; and

any other duration notated within the said audio video stream index or deduced from notations within the said audio video stream index.

25. The method of claim 24, said single contiguous duration of said audio video stream further comprising any of:

a fight, dispute or altercation;

a fight, dispute or altercation by, with, involving or between one or more particular named participants or teams, or participants identified by functional roles, optionally identified by team names.

26. The method of claim 21, said audio video stream comprising an audio video stream of a sports contest.

27. The method of claim 26, further comprising identifying said multiplicity of discontiguous durations of said audio video stream with respect to any one of:

a multiplicity of plays;

a multiplicity of plays of a given type;

a multiplicity of plays executed by any one of:

a named team or side; or

a named player;

a multiplicity of durations of a named sport;

a multiplicity of durations of a named team or side;

a multiplicity of durations of a named player; and

any other multiplicity of durations notated within said audio video stream index or deduced from notations within the said audio video stream index.

28. The method of claim 27, said multiplicity of discontiguous durations of said audio video stream further comprising any of:

a multiplicity of fights, disputes or altercations;

a multiplicity of fights, disputes or altercations by, with, involving or between one or more particular named participants or teams, or participants identified by functional roles, optionally identified by team names.

29. The method of claim 13, said audio video stream comprising an audio video stream of any of:

a political speech or debate;

a talk show;

a movie;

a concert;

an award show;

a news or informational show; or

any other particular variety of video content.

30. The method of claim 7, further comprising:

using any one said natural language command to control an audio video stream repository to suppress display of an excerpt of said audio video stream, resuming display of said audio video stream at either of:

an end of said excerpt of said audio video stream, when a nominal direction of playback is forward in time; or

a start of said excerpt of said audio video stream, when the nominal direction of playback is backward in time.

31. The method of claim 30, said excerpt comprising a single contiguous duration of said audio video stream.

32. The method of claim 30, said excerpt comprising a multiplicity of discontiguous durations of said audio video stream.

33. The method of claim 51, further comprising:

providing an alert registry in which registered alerts are retained.

34. The method of claim 33, further comprising:

using any of said natural language commands to control said alert registry to register an alert pertaining to the occurrence of one or more registered indexed events, within the audio video stream index that is associated with said live audio video stream.

35. The method of claim 34, further comprising:

comparing the contents of the alert registry with said audio video stream index associated with said live audio video stream to determine if any one or more registered indexed events has occurred and, if so, creating an alert notification.

36. The method of claim 35, said alert notification comprising creating an alert signal comprising any of:

an audible indication on the primary display;

a visual indication on the primary display;

a message to or notification on a registered or connected user alert device; and

a message to or notification on a multiplicity of registered or connected user alert devices.

37. The method of claim 36, said message or notification comprising any of:

a text message;

an email message;

a telephone call; and

a signal to an application.

38. The method of claim 36, said registered or connected user alert device comprising any one of:

a cellphone;

a smartphone;

a tablet;

a connected wristwatch; and

any other personal device.

39. The method of claim 34, further comprising:

comparing the contents of the alert registry with said audio video stream index associated with said live audio video stream;

determining if any one or more associated indexed events has occurred and, if so, performing any of:

pausing the display of the audio video stream; and

creating a fiducial mark within the aforementioned audio video stream index, while continuing the recording of the live and ongoing audio video stream, wherein the user may at a later time resume viewing of the audio video stream.

40. The method of claim 39, further comprising:

wherein said resumed viewing of the audio video stream proceeds from any one of:

a time within the recorded live audio video stream corresponding to the aforesaid fiducial mark;

a specified or preconfigured time interval before the time within the recorded live and ongoing audio video stream corresponding to the aforesaid fiducial mark; and

a prior related event that led to the occurrence of the any one or more associated indexed events.

41. The method of claim 38, further comprising:

said user alert device commencing and continuing display of an audio video stream when said user alert device has suitable connection and display capabilities and a suitable communication pathway to said user alert device exists;

said displayed audio video stream comprising either of:

the live audio video stream; and

a time-shifted version thereof.

42. The method of claim 41, further comprising:

when said user alert device has suitable user input device capabilities and a suitable communication pathway from said user alert device exists, controlling said displayed audio video stream by any of:

natural language commands; and

manual commands;

wherein said natural language and manual commands are issued through said user alert device, acting as a user input device.

43. The method of claim 1, further comprising:

using an audio video stream index generation process to augment an existing audio video stream index; and

generating said audio video stream index by performing analysis comprising any of:

automatic analysis of said audio video stream and an existing audio video stream index;

human analysis of said audio video stream and an existing audio video stream index; and

a combination of automatic analysis and human analysis of said audio video stream and an existing audio video stream index;

wherein said analysis is performed upon any of:

the audio video stream images only;

the audio video stream sound only;

the existing audio video stream index; and

any combination of the audio video stream images, the audio video stream sound and the existing audio video stream index.

44. The method of claim 43, further comprising:

using metadata associated to said audio video stream to improve said audio video stream index generation process with respect to its accuracy, efficiency, specificity, or any combination thereof.

45. The method of claim 1, further comprising:

said processor receiving regular manual commands from a user input device;

said processor creating control signals from said regular manual commands by referencing said audio video stream index.

46. The method of claim 45, further comprising:

said regular manual commands arising from the operation of any of buttons, switches, sensors, a touch-sensitive screen or screens, or other physical mechanisms comprising a part of a user input device.

47. The method of claim 1, further comprising:

said processor creating control signals from said user natural language commands without referencing said audio video stream index.

48. An apparatus for assisted viewing of an audio video stream, comprising:

an audio video stream source for originating said audio video stream;

an audio video stream index associated with said audio video stream, the audio video stream index comprising a symbolic representation of events within said audio video stream, said audio video stream index being separate from said audio video stream;

a processor configured to receive user natural language commands from a user input device;

said processor configured to create audio video stream navigation signals from said user natural language commands by referencing said audio video stream index, wherein said referencing includes identifying one or more events, as specified by said user natural language commands among said symbolic representation of events comprising said audio video stream, wherein said audio video stream navigation signals cause navigation within said audio video stream to said one or more events as specified by said user natural language commands; and

said processor configured to produce, responsive to said navigation within said audio video stream, a controlled audio video stream comprising at least in part said one or more events viewable on a primary display.

49. The apparatus of claim 48, further comprising:

said processor configured to create control signals from said user natural language commands without referencing said audio video stream index.

50. The computer implemented method of claim 1, further comprising: initiating playback on said primary display of said controlled audio video stream at a position associated with said one or more events.

51. A computer implemented method for assisted viewing of an audio video stream, comprising:

a processor receiving user natural language commands indicative of registering an alert for occurrence of one or more events in a live audio video stream;

associating an audio video stream index with said live audio video stream contemporaneously with receiving said live audio video stream, said audio video stream index comprising a symbolic representation of events within said live audio video stream, wherein said audio video stream index is separate from said live audio video stream;

said processor referencing said audio video stream index to detect occurrence of said one or more events associated with said user natural language commands; and

responsive to detecting said event associated with said user natural language commands, generating an alert notification for a user indicative of occurrence of said one or more events in the live audio video stream.