Correlation Transformational operators in Reactive Streams.

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Abstract:
This paper describes two operators, autocorrelation and with transformational A.I for an event and sensor streams in reactive object-oriented programming.
The use of stream-beans and event-beans with multi-sensor integration with application in robotics is illustrated, with use in SLAM and other semantic transfer functions with cloud integration.

Keywords: Correlation operators, transformational A.I, Reactive Programming, Correlation operators, EJBs, automated persistence, RxJava, RxJS

What:
Reactive Programming provides for the application of operators through iterators and the observer pattern on streams. In a previous paper (Bheemaiah 2019) we have extended automated persistence of java beans as EJBs to reactive programming, with the addition of event-beans and stream-beans, we now extend the iterator methods on these beans with cross-correlation and auto-correlation functions.
We illustrate this with SLAM algorithms with correlation transformational A.I. We extend the SLAM algorithms to auditory localization.
How:
We define a transformational A.I based system of correlation algorithms for application to stream beans and event beans.
We define its functionality in SLAM and in audio stream based localization of audio sources, both with or without echos.
Why:
Simultaneous localization and mapping can be achieved through both visual and auditory mechanisms. Localization is traditionally implied to mean the localization in absolute or relative coordinates with the creation of mapping and the additional determination of the pose of a camera for sensory input or a similar auditory localization as a pose in the case of lidar or ultrasound or audible range sound. Localization of sound sources is an extension of correlation-based SLAM algorithms.

Summary:

Main Points:

Correlation operators on Reactive streams defined.
Existence theorems for the operators, Pose P, Localization L, Mapping M, Localization of Sound Loc.
Comprehension is defined in a non-noise model for pose P.
Model for sound localization from input streams.

Applications:

Design of robotics as a phenomenological understanding of machine evolution and perception as distinct from biological design and evolution. A new in-silico method of non applicability of animal models in phenomenological research.

[Code Base:]

Introduction.

Correlation operators in robotics, dates back to early perception studies in robotics and computational neuroscience. While experimentalists in the biological community have busied themselves building a bridge between the two kinds of electromagnetic theory, the natural and the machine. This paper proves that in-silico models(Contributors to Wikimedia projects 2004; Devillers 2014) of both simulation and robotics replace the need for animal models for phenomenology defined in machine electromagnetism, defined by maxwell's equations.(Bolton and Open University 2006; Fleisch 2008; Schweikard and Ernst 2015; Nieto, Bailey, and Nebot, n.d.; Fletcher and Zelinsky, n.d.; Pitzer and Stiller 2010) The proof is presented in robotics with better than human performance, un-necessitating the need for human or animal models of phenomenology.
It is thus proven that machine evolution alone requires the bulk of funding support, towards evolving in intentionality, superior

technology which outperforms natural solutions.

Problem Definition.

Rective operators in a SLAM framework for the following correlations, with comprehension and external source localization are defined in a formal framework.
The operators are : Pose P, Localization L, Mapping M, Localization of Sound Loc.

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Formal Definitions:

Axioms = {
There exist :
A video streambean , vS
Audio streambean, aS
A events streambean, eventS
Transformational A.I operators as iterators:
For SLAM: correlation operators, autocorrelation A, cross-correlation CC,
A(vS+aS) -> eventS
CC(vS + aS) -> eventS

SLAM:
Pose estimation:
P(vS)
Localization:
L(vS)
Mapping:
M(vS + aS) -> X:(x^,t)
Localization of Sound:
Loc(aS) -> X(x^, t)

}

Theorems = {

Theorem 1:
Correlation operators:
There exists a transformational A.I based autocorrelation and cross-correlation operator framework for the creation of iterators based on stream inputs and time based and space based correlations.
This is the existence theorem.
The theorem states the existence of a correlation model for a model creation as a semantic transfer or the existence of anoise model in case of incomprehension of an input stream.
For vS, aS, we define a stream fusion operator '+', defining O(vS + aS) where O is an operator, the existence theorum proves, A(vS+aS) ->eventS, where eventS is an eventBean = [noiseEvent|semanticEvent, .]
Where . denotes a composition of one or more events, where A and CC define correlations in time and space.
We apply the existence theorem to SLAM and auditory localization.

We define the existence theorems for the operators, Pose P, Localization L, Mapping M, Localization of Sound Loc. We prove the creation of event streams from the input streams, pose as an event, localization as time events, created with the spacial mapper the X server inspired by the X server of project Atena.
Localization is also described by a similar event space in the context of teh X server.

Theorem 2:
There always exists comprehension in a non-noise model for pose P,
The proof is axiomatic.

Theorem 3:

There always exists a model for localization from input streams, vS and aS and consequently a point cloud persistence in an eventbean in X.
Proof is axiomatic in the existence of a representation of a point cloud as event space in X.

Theorem 4: Localization of sound and its inverse the creation of 360 sound is an echo problem called the echo theorem.

The echo theorem, proves the localization of any auditory source in 360 space as an event space in X, which can consist of both noise events and semantic events, conversely it is possible for every event of localization to recreate by an audio transducer with one or more than one channels the semantic or noise event in 360 space.
The proof of the recreation is in the existence of echo based surround channels and psychoacoustics which is described in an accompanying paper.

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Story: The use of robotics in bottom-up validation and the replacement of animal models, especially in vivo studies is illustrated in this paper with the use of correlation dynamics with model making as semantic transfer and the use of visual and audio sensor fusion as reactive programming for event streams illustrating correlation operators in visual and auditory sensor fusion. Traditionally many animal lives, including adorable hamsters and appealing felines, have been lost in wasteful research. The following paper addresses the PETA vs the University Of Wisconsin Madison ("Website" n.d.)("Website" n.d.; Schneider 2015) case on the details of cruel and unnecessary research on cats by Prof Yin.
Through this paper, the causal mind is defined as a "***foolish means of model creation by correlation dynamics of sensory data***". This paper thus calls for the use of such robotics for the understanding of cognition and causal behavior rather than the need for animal models and wasteful experimental research.

Neurolink and the dangerous Borg Metaphor.(*Captain Picard's Emotional Collapse* 2013)
PETA has led an international movement against the use of nanoprobes and implants in animals and humans.
Experiments like Neuralink's Brain-Computer Interfaces have led to the emergence of a dangerous Borg-like race with dangerous transhumanism. Wearables are a more ethical alternative to avoid an attack of a technology stealing Borg invasion either by viruses or by the sudden appearance of invading Borgs.

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Discussion.

We have thus proven the use of robots as a demonstration, with fundraising capabilities to impress the funding circle, with a better efficacy compared to animal models. While animal models are deemed inefficient and wasteful by industry, especially in drug discovery, even phenomenology needs 3Rs and in-silico techniques. We have proven that robotic algorithms and machine learning replace animal models owing to the inapplicability of maxwell laws based phenomenology in living organisms or in natural evolution.

Thus we have created correlation operators for a broad range of reactive programming for use in robotic systems engineering, to create machine technology, leaps ahead of biological capabilities , even in extreme environments. It is thus proven that the prime directive of evolving machine intelligence is prudent in a future of machine which will outlive humanity.

Future Work.

A codebase for illustrating the use of correlation operators is to be developed with robotic use cases with benchmarks to prove the superiority of machine performance in a wide spectrum of conditions, such as in space environments. This may also be an effort to make all space programs completely robotic un-necessitating expensive human habitation development.

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