Methods of Electronic Control of Model Railway Track

Reviews ver. 1

Review no. 1: Recommended rejection

According to EJOBSAT web page we can cite:

"The EJOBSAT covers the broad range areas related to empirical business sciences and empirical finance including interdisciplinary topics and newly developing areas of business, especially implementing new technology. Empirical advances in buyer behavior, organizational behavior, marketing, business decisions, processes and activities, including corporate finance, risk, investments and business financing are evaluated on a regular basis."

The topic and content of the assessed manuscript is clearly out of scope of EJOBSAT. Maybe it can be supplemented by an economic analysis of the technical solution discussed, but the economic problem is not visible here.

Further, there is no clear declaration of the solved problem supported by a literature review or other substantive arguments. There is no apparent research gap or importance or need for a solution. And in relation to this, the manuscript does not even state a clear objective.

I recommend considering whether the subject is a scientific research problem. If not, the article may be of interest in a popular science journal or web site; if so, I recommend choosing a journal narrowly focused, e.g., on specialized microelectronics applications. In any case, I conclude that the article is not suitable for publication in EJOBSAT.

1. Originality of the contribution: *fair*	2. Title of publication: *suitable*
3. Abstract: *suitable*	4. Introduction: *unsuitable and unfocused*
5. Literature Review: *unfocused*	6. Methodology, Materials, Results: *not appropriate*
7. Results, Interpretation and Economic Intuition: *poor*	8. Robustness Analysis: *insufficient*
9. Discussion, Conclusions and Recommendations: *poor*	10. Style of publication and quality of language: *suitable*

Review no. 2: Recommended major revision

The article "Methods of Electronic Control of Model Railway Track" describes situation in the Railway Vehicles Control Laboratory of the Mendel University, in particular an upgrade of the track control system. After a short description of the laboratory (Section 1) the article continues with Section 2 - Overview of the current state - which contains requirements for a control system for large tracks, a sparse list of possible solutions for such system, list of limitations of the current system and a simple block diagram of the current arrangement. Section 3 is the core of the article, describing the update itself, but unfortunately mostly in a general way (example: "detection of modules added at runtime will be made possible by slight simplification of the bus workflow"). Section 4 - Software support - consists of one paragraph, informing that two computer applications were developed. Eventually, Sections 5 & 6 are a summary of new features that were enabled by the upgrade and a plan of future improvements. Declaration of research problem is missing, the aim of the paper is unclear.

The article gives interesting insight into the world of research related to the control of railroads, unfortunately for an inexperienced user is probably not comprehensible enough, due to the level of details and high number of terms introduced without a context, and for a user that is familiar with the theory of model railroad control the article lacks factual data (generally it is replaced by adjectives) and information.

Comments:
1. Section 2: DCC is an electrical standard (NMRA) for control of vehicles and railroad accessories, using the

track itself; with the RailCom extension it is also possible for decoders of the devices to communicate with the control station (the feedback, it also uses the track). BiDiB uses the protocol as its integral part, MTB does use it for control (regarding RailCom the situation is not clear). Putting DCC at the same level as BiDiB and MTB can be misleading (note that the DCC section itself refers to LocoNET & XPressNET, i.e. the buses at same level as BiDiB & MTB).
2. Section 2.1: statement 'neither vehicle nor track element decoders do not acknowledne receiving of a command' is probably both, factually and gramatically incorrect. When RailCom is used, the decoders have to respond (note that the feature is used by BiDiB).
3. Section 2: In sentence "... briefly mention selected solutions" would probably 'possible' or 'available' be more appropriate
4. A short description of the MTB system components would be valuable; MTB-UNI, MTB-TTL, and MTB-UNIm allows only to guess; also design of the new MTB-UNI and of the infrared module would be interesting to briefly mention.
5. Section 3: A mixture of present and future tense, and the conditional 'should' is misleading; it is hard to distinguish what was already implemented and what is a plan only.

Questions to solve:
1. The only solution considered (other than the MTB update) was in fact BiDiB, not chosen because the limit of 32 devices on a bus segment and 'slightly different addressing options, which is not desirable'. The limit of 32 devices is to increase reliability, and together with the 3-level addressing it gives ~32k of addressable modules. Isn't this topology more suitable for a large scale railroad model track?
2. The MTB was found 'advantageously applicable' because it separates 'vehicle control and the control of track elements'. Isn't a system with DCC integrated directly into its design (like BiDiB does) rather a benefit?
3. How is the information from moving vehicles (locomotives etc.) transferred to the control computer?
4. Per the article is the MTB bus a single RS-485 line (115200kbaud) with maximum of 255 UNI modules attached. Taking into account the requirements for longevity and extendability, and the maximum message size newly being 120 bytes, is the bus bandwidth in line with these requirements? The safety assessment in the article assumes scan of the bus 20 times per second, but this is only valid for 50 modules active and message exchange size of approx. 12 bytes, i.e. near the minimum of 8 bytes.
5. Regarding the infrared, is it used or planned also for wireless communication?

1. Originality of the contribution:	*fair*	2. Title of publication:	*suitable*
3. Abstract:	*suitable*	4. Introduction:	*unsuitable and unfocused*
5. Literature Review:	*unfocused*	6. Methodology, Materials, Results:	*not appropriate*
7. Results, Interpretation and Economic Intuition:	*poor*	8. Robustness Analysis:	*insufficient*
9. Discussion, Conclusions and Recommendations:	*poor*	10. Style of publication and quality of language:	*suitable*

Editor notes:

The manuscript was assessed by two reviewers, expert from the economics field and control HW/SW expert. It seems to be really out of scope of EJOBSAT.