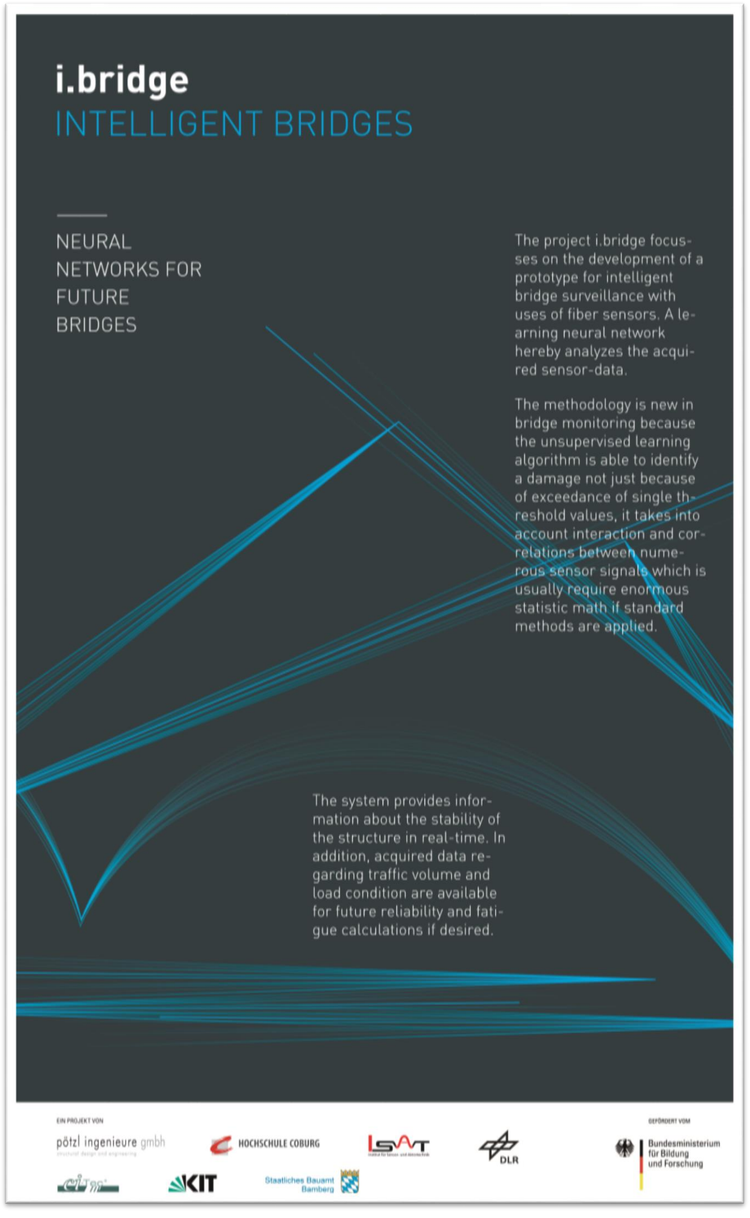
i.bridge – Intelligent Bridge Surveillance



Germany, being one of the most important international transit hubs in central Europe, faces the challenges of maintaining the efficiency of its existing infrastructures as well as the upkeep of sufficient capacity to meet the ever increasing demand. Those challenges are tackled through combinations of carefully planned strategies such as building new constructions, expansion of existing highways and railways and timely as well as efficiently maintenance work on infrastructure. This holds especially true for bridges. It is not just because of significant costs that typically involves in maintenance, refurbishment or replacements work. Given the importance of bridges, the cost of maintaining those infrastructures is substantial in order to ensure their continuous functionality, safety and durability. Therefore, it is eminent to recognize any damage or loss potentials as early as possible to keep the cost to a minimum. It is with this goal in mind that a system for monitoring bridge structures in real-time is currently under development. The advantages of this monitoring system is the use of a neural sensor data fusion network with optical fiber sensors (FBG and Rayleigh system) which allows better and faster processing. All sensor data are merged and processed in a suitably programmed neural network. With the help of such a "smart" control bridge it is possible to achieve a self-configuring monitoring system that keeps the operator informed on the actual status of the bridge structure in real-time. This offers a significant potential for savings, because bridges can then be serviced more effectively and better planning can be made. The inconvenience and economically costly traffic closures/detours may therefore be mitigated or even often just eliminated.

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