C0r0n@ 2 Inspect

Review and analysis of scientific articles related to experimental techniques and methods used in vaccines against c0r0n@v|rus, evidence, damage, hypotheses, opinions and challenges.

Sunday, September 26, 2021

Electromagnetic nanogrids software

Reference

Dhoutaut, D .; Arrabal, T .; Dedu, E. (2018). Bit simulator, an electromagnetic nanonetworks simulator. In: Proceedings of the 5th ACM International Conference on Nanoscale Computing and Communication (pp. 1-6). https://doi.org/10.1145/3233188.3233205

Introduction

1. From the entry on wireless nanocommunication networks , the following question arose, will there be computer programs to simulate or program these nano-networks? If they did not exist, it would be very complex to make the entire graphene ecosystem / hardware inoculated in vaccines work correctly. Investigating this hypothesis, reliable evidence has been found of the existence of specialized computer programs for the simulation and programming of these nanocommunication networks, as early as 2013 (Piro, G .; Grieco, LA; Boggia, G .; Camarda , P. 2013). The work analyzed on this occasion (Dhoutaut, D .; Arrabal, T .; Dedu, E. 2018) presents simulation software capable of "*create instances of applications and individual nanodes that validate protocols and network applications (TS-OOK) used in nanocommunication* "applied to electromagnetic nanogrids.

Facts

1. In the development of wireless nanogrids for nanosensors (known as WNSN), computer programs, specifically simulators, have been created to " *deal with the physical and environmental specificities of nanogrids, since the CPU, memory and power they are extremely limited, requiring a re-foundation of the entire network stack, from channel access and encryption to routing and applications* . " This means that the authors know the communication methods necessary to operate this type of networks, their behavior, characteristics, errors and failures, in order to provide a tool that facilitates the fine-tuning of the network topology, its arrangement, positioning and repercussion. in the transmission of signals and data.
2. The allusion to the TS-OOK protocol, as the one used by default in this type of network, should be especially highlighted. This is confirmed by noting that " *time propagation activation and deactivation coding (TS-OOK) has been proposed, since that this allows communications using extremely short electromagnetic pulses (as short as 100 fs femtoseconds, guided by a very precise clock), which can be generated by tiny antennas and can be detected and processed with limited computing power* . " Therefore, if there is a network of nanosensors and nanodes, as suggested in the images of blood samples from

vaccinated people (see previous entries of swimmers-graphene nanoribbons , crystallized graphene nano-antennas and graphene quantum dots GQD), the communication protocol, necessarily has to be TS-OOK or a derivative protocol, due to its simplicity, low energy cost in the emission of messages and processing capacity.

3. The authors confirm that the BitSimulator1 program " *is simulation software dedicated to electromagnetic nanowires, developed to help researchers better experiment and understand wireless nanoregrid protocols* ." It seems obvious that there are work teams dedicated to the development of software to program the nano-grids and their nano-nodes, as well as the request for services, operations, data and their reception and processing.

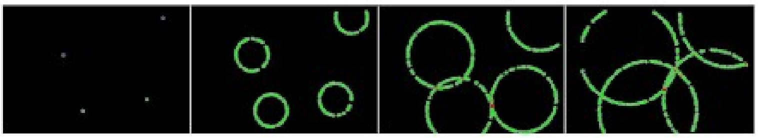
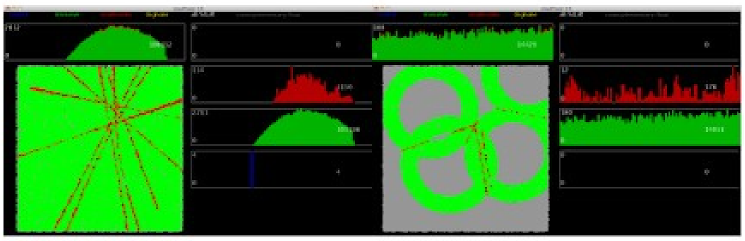


Figure 6: 30 000 neighbors receiving a few packets over time (4 very small time steps).



(a) Large time interval. **(b) Medium time interval.**

Figure 7: Propagation delay causing deferred reception as seen in VisualTracer.

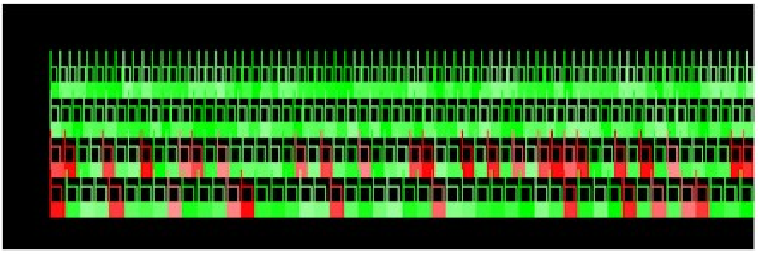


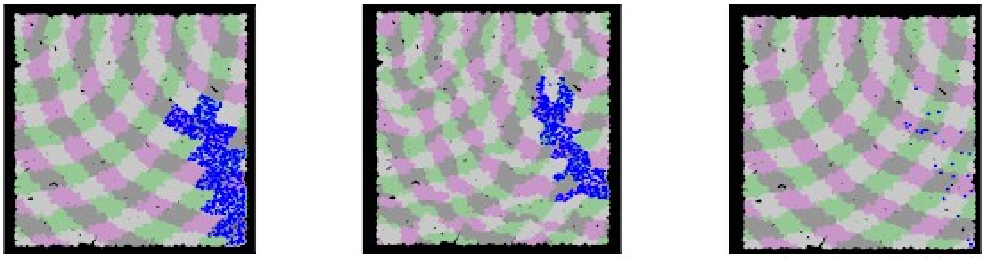
Figure 8: Multiple collisions between 2 flows in a 4 flows scenario.

Fig. 1. The software allows the simulation of different cases of nanogrids, their interaction in time intervals, according to their location, as well as the collision of signals due to multiplexing. (Dhoutaut, D .; Arrabal, T .; Dedu, E. 2018)

4. The article by (Dhoutaut, D .; Arrabal, T .; Dedu, E. 2018) explains how the program is able to interpret TS-OO signals, in fact it indicates that " *after reception, a pulse is simply interpreted as a A binary "1" and its absence as a binary "0". Only a few values are required to communicate: the duration of a pulse Tp, a power reception threshold above which a bit "1" is considered received, and the symbol duration Ts (the time between two consecutive bits)* ". In accordance with this approach, the nanodes of the network act as signal repeaters in order to achieve fluent communication, by multiplexing it. This avoids transmitting messages sequentially, allowing for faster data transfer,being referred to in the

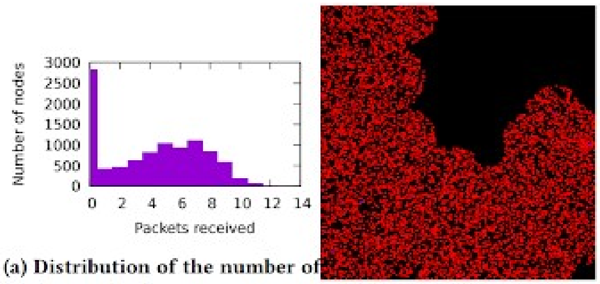
following statement "even if it can send extremely short pulses, an individual node is not expected to send them very fast (mainly due to power and computation limitations) ... an individual frame cannot be sent at extremely high speed. But in a dense environment, the aggregate throughput of many multiplexed frames can reach very high values ... This multiplexing capacity is very different from traditional wireless networks where the frames are sent sequentially." As indicated, in a dense environment, such as the human body, the sequential transfer of data reduces the efficiency of the propagation of the signals, making it essential to multiplex it into several signals. This is one of the objectives of the software simulation, which provides a test environment to tailor the appropriate multiplexing, frequency and band for the nanogrid.

5. Another aspect that is collected in the simulation is the delay in the reception of the signal between nodes, due to their location and multiplexing. This can affect the reconstruction of the signal, the data and therefore the message. In fact, it is stated that "*the extremely short duration of the pulses brings another peculiarity: the radio propagation delay is no longer negligible, even over distances as short as a few millimeters. This delay can be much longer than the duration of a pulse and confuse reception ... Especially in dense networks with many transmitters in range but located at various distances, this means that receiving nodes will experience differences in bit order arriving ... In particular, depending on the relative positions of the nodes, it will cause the bits to overlap in some neighboring nodes and not in others*". The simulator would allow the researchers to develop the operating pattern / coding / programming necessary to reconstruct the signal and multiplex it between the different nodes of the nano-network topology.
6. The complexity in the identification of the pulses and their translation into binary code can be high, as reflected in the following statement " *two overlapping bits do not necessarily cause an error. No error occurs when the frame being traced it currently contains a "1" bit, and at the moment of its reception a "1" bit arrives from another frame, since the power level on the channel is above the reception threshold anyway and the receiver considers that it received a "1". The "0" bits also do not generate errors, since they are silent. To conclude, collisions cause errors if a "0" was sent but a "1" arrives at the same time*" As indicated, the phenomenon of signal superposition can occur between the emitting nanodes and the receiving nanodes, and in such cases the simulation program must be able to facilitate the method of differentiating them.
7. The simulator must be able to represent the topology of the nanonet, its nodes, application method and protocols in a distributed way, as explained in the following paragraph "*each node and each piece of code that is executed is treated separately. Bit-by-bit transmission and error calculation. As presented in the previous section, the mechanisms that affect the bit error rate, but also the error distribution, are highly dependent on the encoding and the payload itself. Errors must be simulated correctly, especially when working on coding schemes. Consideration of radio propagation delay. Small changes in position or time in simulated nodes significantly affect effectively received bits and collisions. Channel access control protocols such as use specific binary frame preambles and calculate the optimal bit spacing. These protocols significantly reduce the risk of collisions,but they can't rule them out, especially in very high-density settings. The correct simulation of the individual bits of the frame (cf. desirable characteristic above) and the timing and scheduling of events (including propagation delay) cannot be neglected at this scale*".



(a) Default SLR zones and an example of unicast route. (b) SLR zones when few nodes participate in the initial beacon flooding. (c) Optimizing the number of forwarders per zone.

Figure 12: Simulation with the SLR routing protocol.



(a) Distribution of the number of copies received.

(b) Incomplete propagation area.

Fig. 2. Representation of different nanode dispersion models in tables a), b) and c). Observe the distribution of data packets received at the nano nodes of the network. (Dhoutaut, D .; Arrabal, T .; Dedu, E. 2018)

8. The viability of the model is explained in the following paragraph " *The correct simulation of the individual bits of the frame (cf. previous desirable characteristic) and the timing and scheduling of events (including the propagation delay) cannot be neglected at this time. scale. (Numerous) frames multiplexed across the channel. This is a defining characteristic of wireless nanocommunications, where numerous frames (possibly hundreds or more) can be interleaved over the air. This implies the ability of nodes to decode multiple frames in Parallel. This is technically possible, but the number of simultaneously decoded frames should be limited to account for hardware or software limitations*." In other words, despite the limitations, the nanoret can transfer data packets successfully, simultaneously, in parallel, even interleaved.
9. Going deeper into the technical characteristics of the simulation, the researchers corroborate the hierarchical network model made up of three layers, as explained in the nanoregrid topology of the previous post . "*To keep the simulator simple and fast while allowing the researcher to control the application and network protocols, an infrastructure with three main network layers is provided. Channel and physical access control layer. It deals with radio propagation and the calculation of reception errors. The simulated devices are equipped with a unique nano-wireless transceiver, whose range and orientation are configurable. This layer implements by default the TS-OOK model with 100 fs pulses and a configurable β parameter per frame. It can also be easily modified to implement any other pulse-based model. Because multiple frames can be temporarily multiplexed across the channel, nodes have to track one (or possibly those) they are interested in.The hardware or software in the devices often limits the number of frames that can be traced simultaneously. This value is configurable in the simulation through the maxCurrentReceptions parameter. This layer is primarily implemented in the C ++ Node class, with supporting location data structures and interactions implemented in the global routing class. Due to the very limited available power, the communication range of*

nanodevices is expected to be very short. Multi-hop, ad-hoc style networks are expected to be common in nano-networks. For this, the routing layer implements three options: no routing, flooding and SLR (Sustainable Longevity Routing)This value is configurable in the simulation through the maxCurrentReceptions parameter. This layer is primarily implemented in the C + + Node class, with supporting location data structures and interactions implemented in the global routing class. Due to the very limited available power, the communication range of nanodevices is expected to be very short. Multi-hop, ad-hoc style networks are expected to be common in nano-networks. For this, the routing layer implements three options: no routing, flooding and SLR (Sustainable Longevity Routing)This value is configurable in the simulation through the maxCurrentReceptions parameter. This layer is primarily implemented in the C + + Node class, with supporting location data structures and interactions implemented in the global routing class. Due to the very limited available power, the communication range of nanodevices is expected to be very short. Multi-hop, ad-hoc style networks are expected to be common in nano-networks. For this, the routing layer implements three options: no routing, flooding and SLR (Sustainable Longevity Routing)Due to the very limited available power, the communication range of nanodevices is expected to be very short. Multi-hop, ad-hoc style networks are expected to be common in nano-networks. For this, the routing layer implements three options: no routing, flooding and SLR (Sustainable Longevity Routing)Due to the very limited available power, the communication range of nanodevices is expected to be very short. Multi-hop, ad-hoc style networks are expected to be common in nano-networks. For this, the routing layer implements three options: no routing, flooding and SLR (Sustainable Longevity Routing)". This explanation characterizes and confirms the use of the routing protocols and the communication models of the nano-networks, explicitly indicating the element responsible for communication in the nano-network. It is the" nano-wireless transceiver ", which fits with the nano-transceivers. graphene, as indicated (Jornet, JM; Akyildiz, IF 2011 | Jornet, JM; Akyildiz, IF 2012 | Jornet, JM; Akyildiz, IF 2013 | Balghusoon, AO; Mahfoudh, S. 2020).

10. Another very interesting feature of the simulator is the ability to simulate the data packets that are transmitted between the nanodes of the network topology. " *Packages contain a binary payload (which can be application-defined, statically defined, or randomly defined), along with various metadata, which helps to visualize and understand the protocols involved. They include source, destination, packet, and flow identifiers , along with a few others* . " This makes it possible to simulate the data load that the nanoregrid could have in the context of the human body. "*Upon successful receipt, the packages are delivered to the ServerApplication instances running on the nodes. It is possible to set the maximum number of bad bits for which the packet is still considered correct. The packets, even damaged ones, can be passed to the upper layer, which allows to implement a coding or redundancy scheme* . "This reduces the error produced by delay, multiplexing, signal overlap, and so on.
11. The BitSimulator simulation program for electromagnetic nanogrids can be downloaded at the following address (Dhoutaut, D. 2021) http://eugen.dedu.free.fr/bitsimulator/ so those readers who are interested in verifying everything indicated, have the opportunity to do so, if they have a Linux operating system. In fact, C0r0n @ 2Inspect is encouraged to test it and share the experiences of use and experimentation in the comments, in order to obtain new evidence on the characteristics of the nanoregrid in a simulation environment similar to that found in vaccines inoculated in people's bodies.

Feedback

1. The article demonstrates the existence of software and simulators to fine-tune the communication and programming models of signals, data and messages through the wireless graphene nanonode nano-network, based on graphene nanotransceivers, already identified in the previous entry on networks wireless nanocommunication. The use of the TS-OOK pulse communication method to transmit data packets in binary code, between the network nano nodes, is also corroborated. It also highlights some of the typical problems that researchers face to achieve smooth communication without errors, in particular the delay factor, the distance and location of the nanodes in the network, the overlapping of signals, the noise caused by the density of the medium in which the nanodes are located (especially important in the context of the human body), etc. All the details provided in the article, once again corroborate the theory that the c0r0n @ v | rus vaccines have been used to install the hardware of a wireless nanonet of graphene nanodes with various functions, depending on the topology layer hierarchical,specifically nanocontrollers, nanosensors, GQD graphene quantum dots and gateway nano-interfaces (nanotransceivers).

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