

# Development of new models and systems to micro- and nanoscale supported in high-precise functional replication of the clone instrumentation of MEMS and NEMS as products of the researchs of the Nanotechnology Laboratory FOSUNAB

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Abstract.

This work shows a technology of artificial cloning for industrial sensors by means of the use of neural networks and genetic mapping. The neural networks allow develop to the intelligent structure of the micro- nanosensors, for it, the method of activation of random values is used to train the sensors and to carry out the learning starting from real devices, the genetic mapping allows the generation of codes for the cloning procedure, for it the mutation processes, crossing, reproduction and investment are used also, an example of a cloned sensor that determines the index of viscosity of lubricant oils with fenol for a monitoring system is briefly explained. The method include the application and interpretation of the genetic mapping that it contains; the codes of the functional structure of the sensor, the mapping is a group of bars of codes that describe the functional operative units of the micro- nanosensors, each operative unit is formed by unitary elements that represent a part of the operation of the sensors such as deviation of the angle of incidence, variation of the intensity of the sheaf of light, etc. A code is a series of digits that represent a part of the operation of the micro- nanosensors where each digit represents a position inside the functional structure (see Figure. 1). The cloned by functional replication the utilities are criteria likeness that apply measured a dimensional and they include parametrical characteristics of the real devices to clone that allow a micro- nanosensors to reach a cloned version.

## References

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## Figures

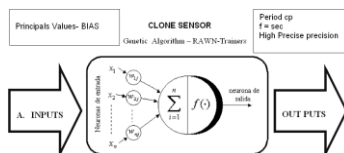


Figure 1: Neural network and genetic algorithm applied scheme for micro- nanosensors clone