DNA correspondent has conducted an interview of Dr. Vinod Vidwans. Excerpts and the gist of the interview is in the form of questions and answers. Hope you will enjoy them.

1) What led you to develop the system?

I extensively studied the ancient treatises on Indian music such as Naradi Shiksha, Natya Shastra of Bharata, and Sangeet Ratnakar of Sharanga Deva which provide common foundations for Hindustani as well as Carnatic music. I realized that the musical concepts mentioned in these treatises are profound and there exists a logical consistency. This insight helped me to build a logical model of Indian classical music. Based on it, I developed a theoretical frame work for generating Indian Classical Music on computers which took about twenty years. These efforts provide foundations for computational theory of Indian Classical Music. The theory and consequential creative expert system addresses many of the outstanding issues related to Shrutis (microtones), characterization of Ragas (Indian melodic modes), classification of Ragas, Chalan or Pakad (Catch-phrase) of Raga, Raga-rendering, Vadi-Samvadi notes of a Raga and composition of a Bandish.

2) What are the advantages of the system?

Pl. refer to the response to question No. 7.

3) What did it require to create the system in terms of expertise and toil?

The whole effort took me more than twenty years, although I was not working on it full time. I worked on this system mostly during vacations and holidays since it was more a passion than a profession for me. I was working on the logical model of Indian music initially for quite some time. During this period I studied Indian and Western logic. I also presented a paper titled `Logical Foundations of Indian Music' in conference on Indian Science and Technology 1991-92. In the process I realized that my initial results need to be demonstrated. I therefore decided to develop an expert system which will demonstrate the logical validity of musical concepts. I was already familiar with programming so it was easier for me. This system requires an interdisciplinary approach. You require knowledge of Indian classical music, Artificial Intelligence, Logic and Language.

4) Tell us briefly about your academic background. Did this background help you in developing the system?

I hold a Ph. D and Master of Design degree from Indian Institute of Technology, Mumbai, India. I also hold a Masters Degree in Fine Arts from Nagpur University

My doctoral work postulates a new paradigm called `Design-Intelligence' and characterizes creativity from a new perspective. I carry more than twenty years of professional and research experience. While working in the industry and managing Information design and development projects, I explored various facets of New Media Design.

My formal education, though not at all directly related to music or computer science, it helped me in looking at Indian music from interdisciplinary perspective. This creatively intelligent expert system is a culmination of my academic knowledge of fine arts, design, philosophy- logic and doctoral research on creativity.

5) The expert system uses principles of artificial intelligence (AI). Please elaborate.

Artificial Intelligence is an interdisciplinary field of knowledge which tries to mimic human behavior through machine. Taking inputs from computer science, mechanical engineering, psychology, philosophy, linguistics and neuro-biology it tries to build models of human behavior. My system tries to mimic creative intelligence of Indian musicians. However, soon I realized I should go beyond and should not restrict to copying existing Indian music. So I decided to build a model of creative musical intelligence for Indian music that is independent of any existing styles or Gharanas of Indian music.

Expert system is supposed to posses the knowledge of an expert in the domain. I encoded the principle concepts of Indian music in the form of generic rules to generate music. It's a rule based system. It does not have any database. It is not a database driven system. In fact, on the other hand it generates the required musical data following the rules. This is the strength of Artificial Intelligence.

6) Tell us something about your musical knowledge and inclination?

I do not have any formal training in Indian classical music. Though I learnt Carnatic music (Sarswati Veena) for a brief period of three years. I learnt Hindustani music on my own.

7) How would you be using this system in educating students on music?

I have encoded generic rules of Indian classical music in the software. The software is capable of generating appropriate alaaps, tans and swara-vistar following these rules. You provide Aroha (ascending order of notes) and Avaroha (descending order of notes) along with Vadi (a dominant) and Samvadi (a sub-dominant) notes of the Raga to the software and it generates a Bandish at the click. It also generates a text file giving the details of the composition so that you can document the textual description of the rendering for future reference and analysis. It can be a useful tool to learn music and understand these rules with the help of a text file.

The software is also capable of generating novel musical phrases appropriate for a specific raga while rendering, so it is useful for experienced musicians to use it as a supplementary tool for Riyaz (practice). The software can be useful for researchers in musicology for testing existing theoretical concepts in Indian music.

For a common listener, the software can be a handy device to generate a new composition every time you want to listen to a specific Raga. If you like the composition, you can save it and listen to it again and again. The system keeps generating new compositions without repeating them. Presently, the system generates compositions in an artificially created instrument which produces flute-like sound and artificial sound of Tanpura. The composition is played in Teentala using sampled Tabla beats.