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# Modeling people's anticipation for Cyprus peace mediation outcome using a neural model

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## Abstract

This paper demonstrates how different scientific disciplines can be successfully merged for efficient real life applications. We propose a novel approach to a social science application using artificial intelligence, by suggesting a neural network designto anticipate or predict people's perceptions regarding the Cyprus conflict and the peace mediation process.Our novel model is based on associating people's views and thoughts on critical issues related to the conflict together with their anticipation for securing a peace treaty by year 2020. Our database is our own and has been collected through completed surveys by the international relations department students at the Near East University. The obtained digitally-coded values of the entire database as well as the proposed associative neural predicting model can be further used in training and testing the neural model, which certainly waives the way for further research in this rare application area for artificial intelligence.

*Keywords:*Neural networks; prediction model; computational politics; cyprus conflict; peace negotiations; artificial intelligence.

## 1. Introduction

One of the newly emerging fields of applications in intelligent applications is computational politics. This is by far of the strangest applications, and yet one that is rapidly developing. The success of such intelligent decision-

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making application has been demonstrated in a few recent works (Jill, 2008; Monterola et al., 2002; Khashman&Khashman, 2016a; Khashman&Khashman, 2016b; Khashman&Nwulu, 2011; Borisyuk et al., 2005; Yu et al., 2008). Our main objective in this paper is to present a novel application where artificial intelligence is used to model people's perception of the Cyprus conflict, the mediation process, and expectation for peace treaty.

In 1960, Cyprus obtained its independence from British colonization and its constitution stipulated a power sharing constitution between the Turkish and Greek Cypriots to clear the historical roots of earlier unrest between the two communities. The constitution stipulated that the president of Cyprus would be from the Greek Cypriot community (80%) and the vice-president from the Turkish Cypriot community (20%). However, United Cyprus came to an end with Greek Cypriots' misjudged "13 point amendments"(November 1963) that amounted to a call for drastic changes of the Cyprus constitution aimed at curtailing the political power of the Turkish Cypriots so to create a unitary state(Khashman, 1999, 2001, 2002, 2015). The constitutional crisis and breakup of the power sharing resulted in inter-communal violence between 1963-1974, thus united Cyprus lasted only three years. The ethnic violence drove the Turkish Cypriots first into enclaves, where they continued to live intermittently until 1974, then the Turkish military intervened (invoking its right of intervention from the Guarantee Agreement) and created a homogenous territorial zone for the Turkish Cypriots; consequently partitioning the island into two: North and South (Khashman, 1999). Beyond the UN buffer zone, which separates two conflicting parties today, two political entities operate- the Greek Cypriot and Turkish Cypriot states. The former as the Republic of Cyprusis recognized by the international community despite the domestic legitimacy deficit- acting in the name of the whole island at the international level. But Northern part of the island (Turkish Republic of Northern Cyprus), which does not accept the legitimacy of the Republic of Cyprus, has only been recognized by Turkey (Khashman, 2015).

In the long and intractable Cyprus conflict the parties have been entrenched in their positions and could not reach a compromise agreement for the unification of the island through the UN mediation process- eluding third party mediation for almost half a century. The core issues that is on the negotiation table are 'governance and power sharing', 'EU matters', 'property', 'refugees', 'security and guarantees', 'economy', and 'territorial adjustment'. These issues became the major obstacles in reaching an agreement(Khashman, 2015).

In this work, we consider the core issues that are vital for the people of Cyprus and then design an intelligent neural network prediction model that associates people's views on these issues with their expectation of a solution to the Cyprus problem. The motivation of using artificial neural networks has in general been attributed to their capabilities in effectively associating or approximating nonlinear paradigms (Khashman, 2006a). Furthermore, the successful use of neural networks; and in particular the back propagation neural network (BPNN), in different application fields has been demonstrated in our previous works(Khashman&Sekeroglu, 2005; Khashman, 2006b, 2008a, 2008b, 2009, 2012; Khashman et al., 2016).

The paper is organized as follows: in section 2 we describe the elements or attributes of the dataset and show how to collect the information data. In section 3 we demonstrate our method of transforming people's opinions on the Cyprus peace mediation process, into digital data that is suitable for neural network arbitration. In section 4, we present a novel neural network prediction model design aimed at associating the obtained data from people with their decisions on whether the Cyprus conflict could be solved by the year 2020. Finally, section 5 concludes this work.

## 2. Database Setup and Description

In this section, we describe the process of obtaining people's thoughts and opinions on 15 critical issues or attributes that are related to the Cyprus conflict and peace mediation process.These attributes, which affect the possibility of having a peace treaty and a solution by the year 2020, are briefly described as:

### 2.1 Status quo is acceptable
Status quo means the present division of the island between the Greek Cypriots in the South and the Turkish Cypriots in the North after the Turkish intervention (through invoking its Guarantor status according to 1960 Treaty of Guarantee) in 1974 due to the ethnic conflict in the island between the two communities. Although there are alternative settlement structures the main aim of the process has been the unification of the island by a bi-communal and bi-zonal federation instead of status quo.